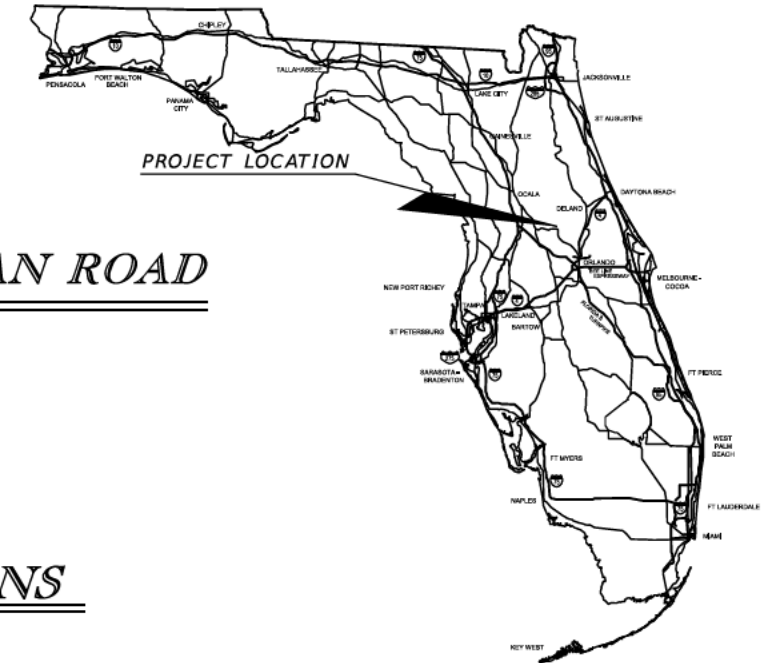


**CENTRAL FLORIDA  
EXPRESSWAY AUTHORITY**

**S.R. 429 WEKIVA PARKWAY  
FROM NORTH OF S.R. 500 (US 441) TO NORTH OF PONKAN ROAD**

**ORANGE COUNTY  
WEKIVA PARKWAY-PROJECT NUMBER 429-202**

**INTELLIGENT TRANSPORTATION SYSTEM PLANS**



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**CENTRAL FLORIDA  
EXPRESSWAY AUTHORITY  
BOARD MEMBERS**

WELTON G. CADWELL	CHAIRMAN
S. SCOTT BOYD	VICE-CHAIRMAN
BRENDA CAREY	SECRETARY/TREASURER
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FRED HAWKINS, JR.	BOARD MEMBER
TERESA JACOBS	ORANGE COUNTY MAYOR
WALTER A. KETCHAM, JR.	BOARD MEMBER
JAY MADARA	BOARD MEMBER
S. MICHAEL SHEERINGA	BOARD MEMBER

PLANS PREPARED BY:



TRAFFIC ENGINEERING DATA SOLUTIONS, INC.  
80 SPRING VISTA DRIVE  
DEBARY, FL 32713  
PHONE: 386.753.0558  
FAX: 386.753.0778  
CONTRACT NO. 000850  
VENDOR NO. F208375642001  
CERT. OF AUTH. NO. 27392

NOTE: THE PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID 407500-1-52-01

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

**WEKIVA PARKWAY - 429-202  
APPROVED FOR CONSTRUCTION  
MAY 2015**

GOVERNING STANDARDS AND SPECIFICATIONS:  
FLORIDA DEPARTMENT OF TRANSPORTATION,  
DESIGN STANDARDS FISCAL YEAR 2014,  
AND STANDARD SPECIFICATIONS FOR ROAD AND  
BRIDGE CONSTRUCTION DATED 2014,  
AS AMENDED BY CONTRACT DOCUMENTS

APPLICABLE DESIGN STANDARDS REVISIONS:  
For Design Standards revisions click on  
"Design Standards" at the following web site:  
<http://www.dot.state.fl.us/rddesign/>

KEY SHEET REVISIONS	
DATE	DESCRIPTION

INTELLEGTENT TRANSPORTATION SYSTEM PLANS  
ENGINEER OF RECORD: FRED D. FERRELL, P.E.

P.E. NO.: 41902

FISCAL YEAR	SHEET NO.
14	IT-1

CFX PROJECT MANAGER: GLENN PRESSIMONE, P.E.  
HNTB PROJECT MANAGER: GREGORY J. HORNBECK, P.E.





**GENERAL NOTES**

1. THE CONTRACTOR SHALL NOTIFY THE CENTRAL FLORIDA EXPRESSWAY AUTHORITY 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
2. THESE PLANS REFLECT CONDITIONS KNOWN DURING PLAN DEVELOPMENT. IN THE EVENT ACTUAL PHYSICAL CONDITIONS PREVENT THE APPLICATION OR THE PROGRESSION OF ANY WORK SPECIFIED IN THESE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND PRIOR TO ANY FURTHER WORK ACTIVITY.
3. IN ORDER TO MINIMIZE IMPACT TO LANDSCAPING MATERIAL, THE CONTRACTOR SHALL EXERCISE CAUTION THROUGH LANDSCAPING LIMITS DURING ALL PHASES OF CONSTRUCTION ACTIVITY. ANY LANDSCAPE MATERIAL DAMAGED DURING THE CONSTRUCTION PROCESS SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH ALL OTHER CONTRACTORS OPERATING IN THE PROJECT AREA.
5. THE CONTRACTOR SHALL EXERCISE ALL APPROPRIATE SAFETY MEASURES WHEN WORKING IN OR AROUND AREAS OF OVERHEAD ELECTRICAL/TRANSMISSION LINES OR UNDERGROUND UTILITIES. HAND DIGGING SHALL BE USED AROUND ALL KNOWN AND LOCATED UTILITIES.
6. FLORIDA STATUTE 556 REQUIRES CONTRACTORS TO CALL SUNSHINE STATE ONE-CALL OF FLORIDA, INC., AT 1-800-432-4770, NOT LESS THAN 2 OR MORE THAN 5 BUSINESS DAYS BEFORE BEGINNING ANY EXCAVATION OR DEMOLITION. NOT ALL UTILITY AGENCIES/OWNERS ARE MEMBERS OF SUNSHINE STATE ONE-CALL OF FLORIDA, INC.
7. THE CONTRACTOR IS RESPONSIBLE FOR PAYING OF ALL TOLLS INCURRED FROM USING THE AUTHORITY SYSTEM IN TRANSPORTING WORKERS, EQUIPMENT OR MATERIALS TO AND FROM THE SITE OF WORK AT NO ADDITIONAL COST TO THE AUTHORITY. CONTRACTOR SHALL ACCESS THE PROJECT BY EXISTING RAMPS. NO ACCESS WILL BE ALLOWED THROUGH THE RIGHT-OF-WAY FENCE UNLESS APPROVED BY THE AUTHORITY. NO U-TURNS SHALL BE PERMITTED IN THE MEDIAN.
8. VIBRATORY ROLLERS SHALL NO BE ALLOWED FOR COMPACTION OPERATIONS OF PAVEMENT, SOILS, ETC. ABOVE FIBER OPTIC CABLES (AT&T, MCI WORLD COM, CFX FIBER OPTIC ETC). THE LOCATION OF ALL PROPOSED EQUIPMENT TO BE INSTALLED SHALL BE CONSIDERED TO BE APPROXIMATE. CAMERA POLE LOCATIONS SHOWN ON PLANS WHICH ARE IN CONFLICT WITH LIGHTING, UTILITIES, DRIVEWAYS, WHEELCHAIR RAMP, ETC. MAY BE ADJUSTED SLIGHTLY (+/- 5') AS DIRECTED BY THE CONSTRUCTION ENGINEER. THE ENGINEER OF RECORD MUST APPROVE EXTREME LOCATION CHANGES.
9. THE WORK CORRIDOR SHALL BE RESTORED TO PRE-WORK CONDITIONS.
10. ALL CONCRETE GUTTERS SHALL BE MAINTAINED OR RESTORED TO PRE-WORK CONDITIONS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATIONS OF EXISTING ROADWAY LIGHTING CONDUIT PRIOR TO INSTALLATION OF CAMERA POLE FOUNDATIONS.
12. FOR ALL OVERHEAD SIGN STRUCTURES, THE CONTRACTOR SHALL EXERCISE ALL APPROPRIATE SAFETY MEASURES WHEN WORKING IN OR AROUND THESE AREAS. CAUTION SHALL BE TAKEN IN RESPECT TO MAINTAINING THE POWER FEED AND GROUNDING CIRCUITRY. ALL FEATURES SHALL BE RESTORED TO ORIGINAL PRE-WORK CONDITIONS.
13. THE CONTRACTOR SHALL HAND DIG THE FIRST 4' AT EACH POLE INSTALLATION LOCATION. BACKFILLING AROUND POLE SHALL CONFORM TO SECTION I25 OF THE STANDARD SPECIFICATIONS.
14. CONTRACTOR SHALL MAKE SURE THAT ALL NECESSARY PROTECTIVE MEASURES ARE TAKEN TO SAFEGUARD EXISTING UTILITIES DURING FIBER/EQUIPMENT INSTALLATIONS.
15. ALL ELECTRICAL WORK SHALL MEET ALL REQUIREMENTS OF THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRIC SAFETY CODE, AND THE STATE OF FLORIDA D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. ALL COMPONENTS SHALL BE PROPERLY GROUNDED AND BONDED PER N.E.C. REQUIREMENTS.

16. PULLING INSTRUCTIONS FOR POWER CONDUCTORS: CONNECT PULLING DEVICES TO COPPER WIRE AND NOT TO JACKET AND MEET MANUFACTURERS REQUIREMENTS. USE PULLING COMPOUND PER MANUFACTURES REQUIREMENTS. ALL BENDS SHALL NOT BE LESS THAN RECOMMENDED BY N.E.C. OR N.E.S.C. FOR CABLE USE.
17. ALL APPLICABLE PROVISIONS OF EXISTING UTILITY EASEMENTS WILL BE ADHERED TO BY THE CONTRACTOR.
18. ALL MISCELLANEOUS WORK NECESSARY IN THE SHOULDER AREA TO CONSTRUCT CAMERA POLES, PULL BOXES, ETC. (I.E. GRADING, SODDING, CLEARING AND GRUBBING, GUARDRAIL OR FENCE RESETTING) IS CONSIDERED INCIDENTAL, AND IS TO BE INCLUDED IN THE COST OF CAMERA POLE ASSEMBLY, PULL BOX, ETC. ALL DISTURBED AREAS SHALL BE SODDED. THE CONTRACTOR SHALL HAUL ALL EXCESS EXCAVATION AND WASTE MATERIALS OFF-SITE. REMOVAL OF THESE MATERIALS SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE CAMERA POLE ASSEMBLY, PULL BOX, ETC.
19. THE CONTRACTOR SHALL MAINTAIN THE EXISTING FIBER OPTIC NETWORK WITHIN THE LIMITS OF CONSTRUCTION. AT NO TIME SHALL THERE BE ANY LOSS OF COMMUNICATIONS OR DATA ALONG THE CFX FIBER OPTIC NETWORK. ANY CONSTRUCTION ACTIVITIES WITHIN TEN FEET OF THE FIBER OPTIC NETWORK SHALL BE PERFORMED ON ONE SIDE OF THE ROAD AT A TIME. THE CONTRACTOR SHALL REVIEW SPECIFICATION 63I FOR OTHER FON PRESERVATION DETAILS.
20. ALL OF THE GENERAL NOTES FOR THE CONTRACT CONSTRUCTION DOCUMENT SET WILL APPLY TO THIS PLAN SET.
21. UPON FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL FORWARD A COMPLETE SET OF AS-BUILT PLANS WITH ALL CHANGES MARKING IN RED TO THE ENGINEER. THE AS-BUILTS SHALL CONTAIN ACCURATELY DIMENSIONED LOCATIONS FOR FIBER OPTIC CABLE, PULL BOXES POWER SERVICES, CONDUITS, STRUCTURES, AND FIELD COMPONENTS. THE AS-BUILT PLANS SHALL INCLUDE A RECORD OF THE COLOR DESIGNATIONS OF ALL HDPE CONDUITS USED, AS WELL AS FIBER SPLICING AND PORT ASSIGNMENTS.
22. ALL ELECTRICAL EQUIPMENT SHALL BE WEATHERPROOF.
23. THE LOCATION OF THE CONDUCTORS, CONDUITS, JUNCTION BOXES, SERVICE POINTS, AND CONTROLLER BOXES ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE LOCAL CONDITIONS AND EXISTING UTILITY LOCATIONS. CONDUIT SHALL BE PLACED WITHIN EXISTING RIGHT-OF-WAY.
24. THE CONTRACTOR SHALL REFERENCE SIGNING & MARKING PLANS AND COORDINATE WITH S&PM CONTRACTOR REGARDING LOCATIONS OF PULL BOXES AND COORDINATE WITH FIBER OPTIC CONTRACTOR FOR LOCATION OF MANHOLE TIE-INS.
25. ALL SYMBOLS FOR ROADWAY LIGHTING ARE SHOWN FOR REFERENCE ONLY.
26. MAINTENANCE OF TRAFFIC:
  - A. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE AUTHORITY FOR APPROVAL WHICH CONSISTS OF UNMODIFIED FDOT DESIGN STANDARDS (600 SERIES); OTHERWISE THE CONTRACTOR MUST PROVIDE A TRAFFIC CONTROL PLAN WHICH IS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF FLORIDA. ONCE APPROVED BY THE AUTHORITY, THE TRAFFIC CONTROL PLAN MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. ALL COSTS ASSOCIATED WITH THE MAINTENANCE OF TRAFFIC SHALL BE INCLUDED IN PAY ITEM 102-1 MAINTENANCE OF TRAFFIC (LUMP SUM)
  - B. TRAFFIC SHALL BE MAINTAINED IN ACCORDANCE WITH FDOT DESIGN STANDARDS, INDEX 600 SERIES.
  - C. LANE WIDTH SHALL NOT BE LESS THAN 11 FEET. LANES SHALL BE PROPERLY DELINEATED DURING ALL PHASES OF CONSTRUCTION.

- D. THE FOLLOWING REGULATORY SPEED LIMITS SHALL BE MAINTAINED DURING CONSTRUCTION:  
SR 429 (DANIEL WEBSTER WESTERN BELTWAY) 45 MPH TO 65 MPH
- E. FOR ADDITIONAL SIGN INFORMATION, INCLUDING SIZES, REFER TO STANDARD HIGHWAY SIGNS MANUAL SPECIFIED IN THE MUTCD
- F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A LAW ENFORCEMENT OFFICER DURING ALL LANE CLOSURE OPERATIONS AND DURING ALL NIGHT OPERATIONS.
- G. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REMOVE ALL UNUSED BARRICADES, SIGNS, AND/OR WARNING DEVICES TO THE APPROPRIATE STORAGE FACILITY UPON COMPLETION OF THEIR USE FOR THE DESIGNED TRAFFIC CONTROL OPERATION. DURING RESTRICTED HOURS OF OPERATION, UNUSED MOT SIGNS MAY REMAIN IN PLACE, BUT SHALL NOT FACE TRAFFIC AND SHALL BE COMPLETELY COVERED SO AS NOT TO BE READABLE.
- H. THE CONTRACTOR IS ADVISED THAT LANE CLOSURES ARE NOT PERMITTED FROM 6:00 A.M. TO 9:00 P.M. (MONDAY THRU SUNDAY) ON THE S.R. 429 (DANIEL WEBSTER WESTERN BELTWAY) AND FROM 5:00 A.M. TO 11:00 P.M. ON THE RAMPS. IF THE DIRECTOR OF CONSTRUCTION OR HIS DESIGNEE DETERMINES ANY LANE CLOSURE IS CAUSING EXTENDED TRAFFIC CONGESTION, THE DIRECTOR OF CONSTRUCTION OR HIS DESIGNEE MAY DIRECT THE CONTRACTOR TO OPEN THE LANE CLOSURE UNTIL TRAFFIC RETURNS TO AN ACCEPTABLE FLOW. EITHER THE DIRECTOR OF CONSTRUCTION OR HIS DESIGNEE WILL DETERMINE WHEN THE FLOW OF TRAFFIC IS ACCEPTABLE.

- I. DELAY COSTS TO THE CONTRACTOR WILL RESULT IF ALL TRAVEL LANES AND RAMPS ARE NOT OPEN TO TRAFFIC DURING THE TIMES OUTSIDE OF THE PERMITTED LANE CLOSURE HOURS. THE CONTRACTOR SHALL PLAN OPERATIONS SUCH THAT ALL EQUIPMENT AND MATERIALS INSTALLED BY THE CONTRACTOR FOR LANE CLOSURES ARE REMOVED FROM THE CLEAR ZONE AND TRAVEL LANES ARE REOPENED TO TRAFFIC. FOR MAINLINE AND RAMP CLOSURES THAT OCCUR OUTSIDE THE PERMITTED LANE CLOSURE HOURS, A LANE RENTAL FEE WILL BE ASSESSED TO THE CONTRACTOR IN THE AMOUNT OF \$1,000 PER LANE/RAMP FOR EACH MINUTE THAT ANY LANE/RAMP IS NOT OPEN TO TRAFFIC.
- J. LANE RENTAL FEE WILL BE ASSESSED AND WILL CONTINUE TO ACCRUE UNTIL SUBJECT LANE/RAMP IS OPEN TO A TRAFFIC FLOW AS RECORDED BY THE AUTHORITY. THE AUTHORITY SHALL HAVE THE RIGHT TO APPLY AS PAYMENT ON SUCH FEES ANY MONEY THAT IS DUE TO THE CONTRACTOR BY THE AUTHORITY. AT THE DISCRETION OF THE DIRECTOR OF CONSTRUCTION AND/OR HIS DESIGNEE, LANE RENTAL FEE WILL NOT BE CHARGED FOR FAILURE TO OPEN TRAFFIC LANES/RAMPS IF SUCH CAUSE IS BEYOND THE CONTROL OF THE CONTRACTOR, I.E. CATASTROPHIC EVENTS, AND ACCIDENTS NOT NOT RELATED OR CAUSED BY THE CONTRACTOR'S OPERATIONS.
- K. CONTRACTOR SHALL COORDINATE WITH TOLL PLAZA MANAGERS 72 HOURS PRIOR TO PERFORMING ANY WORK WITHIN 2,000 FEET OF A TOLL PLAZA.
- L. AUTHORITY PROPERTY AFFECTED BY THE CONSTRUCTION WORK SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN EXISTING PRE-CONSTRUCTION CONDITION UNLESS SPECIFICALLY EXEMPT IN THE PLANS. COST SHALL BE INCIDENTAL TO OTHER CONSTRUCTION.

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ITS NETWORK GENERAL NOTES	SHEET NO. IT-4
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902	SR 429	429-202			



**GENERAL NOTES (CONTINUED)**

**27. FON UTILITY WORK PROCEDURE**

AN ANS TICKET MUST BE OPENED WITH CAROUSEL INDUSTRIES FOR ALL WORK PERFORMED IN ANY MANHOLE LOCATED ON THE FIBER OPTIC NETWORK (FON)- NO EXCEPTIONS.

1. CALL CAROUSEL INDUSTRIES ANS TO OPEN A NEW TICKET. THE PHONE NUMBER IS 855-303-9119, THEN OPTION 1, THEN OPTION 1.
2. IDENTIFY YOURSELF AS A CONTRACTOR WORKING FOR THE "CENTRAL FLORIDA EXPRESSWAY AUTHORITY" (CFX).
3. PROVIDE YOUR NAME AND CONTACT INFORMATION (INCLUDING PHONE NUMBER).
4. IDENTIFY THE AREA IN WHICH YOU ARE GOING TO BE WORKING AND WHICH SITES YOU ANTICIPATE AN ALARM FOR (IDENTIFY BY THE NEAREST MAINLINE PLAZA OR ON/OFF RAMP OR HEAD QUARTERS.)
5. ADVISE THE CENTURYLINK TECHNICIAN OF THE ESTIMATED TIME FRAME OF THE BEGINNING AND END OF YOUR WORK.
6. ASK THE CENTURYLINK TECHNICIAN FOR A REMEDY TROUBLE TICKET NUMBER.
7. ONCE WORK IS COMPLETE, CALL BACK AND REFERENCE THE REMEDY TICKET TROUBLE NUMBER RECEIVED EARLIER AND ADVISE THE CENTURYLINK TECHNICIAN THAT THE WORK HAS BEEN COMPLETED. BE SURE TO ASK THE TECHNICIAN IF ALL ALARMS ASSOCIATED WITH THIS TICKET ARE CLEAR. IF ALL ALARMS ARE CLEAR, ADVISE THE TECHNICIAN IT IS OK TO CLEAR THE TROUBLE TICKET. IF ALARMS REMAIN, ADVISE CEI IMMEDIATELY AND WORK TO RESOLVE THE ISSUE.

**28. FON UTILITY WORK GUIDELINES:**

1. NO CONTRACTOR SHALL BE PERMITTED TO ENTER THE MAINLINE OR RAMP PLAZAS WITHOUT PRIOR APPROVAL FROM THE AUTHORITY.
2. NO CONTRACTOR SHALL BE PERMITTED TO MOVE ANY PATCH PANEL CONNECTIONS UNLESS INDICATED ON THE PLANS OR WITHOUT PRIOR APPROVAL. ANY PATH PANEL CHANGES SHALL BE DOCUMENTED IN WRITING.
3. FOR ALL WORK INVOLVING THE DISRUPTION OF LIVE NETWORK TRAFFIC, THE CONTRACTOR SHALL PROVIDE A HIGH LEVEL OF METHOD OF PROCEDURE (MOP) AT LEAST ONE (1) WEEK IN ADVANCE OF THE PRE SPLICING MEETING. THIS MOP MUST BE REVIEWED AND APPROVED PRIOR TO BEGINNING WORK. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO FIBER OPTIC SPLICING PAY ITEMS.
4. A PRE-SPLICE MEETING SHALL BE HELD AT LEAST ONE (1) WEEK IN ADVANCE OF THE PROPOSED SPLICING DATE.
5. A PRIMARY AND BACKUP EMERGENCY CONTACT SHALL BE PROVIDED AS WELL AS AN ESCALATION CONTACT BEFORE BEGINNING WORK.
6. THE CONTRACTOR SHALL VERIFY WITH EITHER THE GEC OR THE CEI THAT THEY ARE IN POSSESSION OF THE MOST RECENT PLAN UPDATES BEFORE BEGINNING ANY WORK.
7. AN AUTHORITY REPRESENTATIVE SHALL BE PRESENT ON-SITE WHEN SPLICING LIVE FIBER, OR "HOT CUTS", ARE TAKING PLACE.
8. THE CONTRACTOR SHALL OPEN A TICKET WITH CENTURYLINK PRIOR TO BEGINNING ANY WORK, AND CONTACT CENTURYLINK TO CLOSE TICKET AFTER THE WORK IS COMPLETE, AS CURRENTLY INSTRUCTED IN THE FON UTILITY WORK PROCEDURE. IN ADDITION TO THIS PROCEDURE, CENTURYLINK SHALL VERIFY THAT ALL ROUTER ALARMS HAVE CLEARED.
9. ALL WORK INVOLVING THE SPLICING OR TESTING OF LIVE FIBERS IS TO BE PERFORMED OUTSIDE OF NORMAL BUSINESS HOURS (7AM-6PM MONDAY-FRIDAY) UNLESS APPROVED BY THE AUTHORITY.

29. CABINET EQUIPMENT IS NOT TO BE STACKED. THE WIRING DIAGRAMS SHOW BLOCKS ON TOP OF ONE ANOTHER FOR CLARITY.

**30. FIBER OPTIC MANHOLE SPACING:**

THE SPACING BETWEEN FIBER OPTIC MANHOLES (FOMH) INSTALLED IN A PAVED SHOULDER SHALL NOT EXCEED 1500'. SPACING BETWEEN FOMH INSTALLED IN AN UNPAVED SHOULDER SHALL NOT EXCEED 4000'.

**CONDUIT:**

1. THE BACKBONE FIBER OPTIC CONDUIT NETWORK SHALL BE MAINTAINED AT A CONSTANT HORIZONTAL AND VERTICAL LOCATION AS SHOWN IN THE ROADWAY CROSS SECTIONS OF THE ROADWAY PLANS, DRAINAGE PLANS, STRUCTURE PLANS AND OTHER PLAN COMPONENTS OF THIS PROJECT.

2. ALL FIBER OPTIC CONDUIT SHALL HAVE AN "CFX FIBER OPTIC CABLE BURIED BELOW" WARNING TAPE CONTINUOUSLY RUN IN THE TRENCH 18" BELOW GRADE. IN ADDITION, RAISED MARKERS INDICATING F.O. CABLE BURIED BELOW SHALL BE INSTALLED AT EACH MANHOLE ALONG THE FIBER ROUTE AND AT ANY TURNS IN THE CONDUIT RUN.
3. CONDUIT RUN SHALL NOT EXCEED 270° OF BENDS BETWEEN MANHOLES OR JUNCTION BOXES.
4. ALL HDPE CONDUIT SYSTEMS ARE COLOR-CODED. THE CONTRACTOR MUST MATCH THE COLOR DURING RESTORATION. THE COLOR FORMAT SHALL BE ORANGE, BLUE, BROWN, GREEN, WHITE, RED/GRAY, BLACK, AND YELLOW. THE NINTH CONDUIT SHALL BE BLACK/ORANGE PLACED ON TOP OF THE EIGHT 1-INCH HDPE CONDUITS TO HOUSE THE LMS TONE WIRE IN ALL LOCATIONS.
5. THE BLUE HDPE CONDUIT ENTERING A PROPOSED FIBER OPTIC MANHOLE (FOMH) SHOULD CONNECT TO THE BLUE 1" CONDUITS LOCATED INSIDE THE 4" STUBOUT. A 4" DUCT ORGANIZER IS REQUIRED FOR CONDUIT ENTRY INTO THE MANHOLES. LEAVE MINIMUM OF 100 FEET OF CABLE SLACK INSIDE FOMH BEFORE ENTERING THE EXISTING FIBER OPTIC BACKBONE.
6. ALL HDPE CONDUIT CONNECTIONS SHALL BE JOINED WITH ELECTROFUSION COUPLE.
7. ALL EMPTY POWER CONDUITS SHALL BE CAPPED AND FURNISHED WITH A PULL STRING FOR FUTURE USE.
8. MINIMUM REQUIRED CONDUIT BURY DEPTHS SHALL BE MAINTAINED WHERE CONFLICTS OCCUR WITH DRAINAGE OR OTHER UTILITIES PER THESE PLANS.
9. IN ACCORDANCE WITH N.E.C. IDENTIFY ALL CIRCUITS AND EQUIPMENT WITH "LAMICOID TAGS".
10. THE TONE WIRE FOR THE CCTV, DCS, AND DMS FIBER OPTIC CONDUIT RUNS SHALL BE CONNECTED TO THE GROUNDING SYSTEM IN THE FIBER OPTIC MANHOLE AND 2 FEET OF TONE WIRE SHALL BE COILED IN THE FIBER OPTIC PULL BOX OR CABINET AT THE DEVICE LOCATION. THE TONE WIRE FOR THE 9-1" BACKBONE FON CONDUIT SHALL BE SPLICED CONTINUOUS IN THE FIBER OPTIC MANHOLES. SPLICING THE TONE WIRE FOR THE CCTV, DCS, OR DMS TO THE BACKBONE TONE WIRE WILL NOT BE PERMITTED.
11. ALL NEW UNDERGROUND CONDUIT SHALL BE SEALED AT BOTH ENDS TO PREVENT THE ENTRY OF DUST, DIRT, OR MOISTURE.
12. ALL CONDUIT TRENCHES SHALL BE BACKFILLED COMPLETELY TO PROVIDE SAFE CROSSING BY THE END OF EACH WORKING DAY OR WHENEVER THE WORK ZONE BECOMES INACTIVE. THE CONTRACTOR SHALL NOT OPEN ANY AREA THAT CANNOT BE BACKFILLED IN THE SAME DAY/NIGHT OPERATION.
13. IT SHOULD BE NOTED THAT NO TEST BORINGS WERE MADE WHERE CONDUIT RUNS ARE TO BE INSTALLED BY JACKING OR TRENCHING. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE JOB SITE CONDITIONS BEFORE SUBMITTING BID PROPOSALS IN ACCORDANCE WITH SECTION 2-4 OF THE FDOT SPECIFICATIONS. THE CONTRACTOR SHALL HAND DIG THE FIRST 4' TO VERIFY POSSIBLE UTILITY CONFLICT.
14. MULTIPLE CONDUIT RUNS IN THE SAME TRENCH SHALL BE PAID FOR AS AN UNDERGROUND CONDUIT RUN. THE COST OF THE DIRECTIONAL BORE SHALL BE INCIDENTAL TO THE CONDUIT PAY ITEM NUMBER.
15. ALL HDPE CONDUIT SHALL BE SMOOTH WALL AND HAVE A RATING OF SDR-11 OR THICKER. ALL PVC CONDUIT SHALL BE RATED 40 OR THICKER.
16. ALL HARDWARE AND BRACKETS ASSOCIATED WITH BRIDGE-MOUNTED BRFG SHALL BE INCIDENTAL TO THE COST OF BRFG.

**PULL BOXES:**

1. ALL FIBER OPTIC PULL BOXES SHALL HAVE "CFX" STAMPED ON THE COVER AND ALL POWER PULL BOXES SHALL HAVE "CFX POWER" STAMPED ON THE COVER.

2. MAXIMUM PULL BOX SPACING FOR POWER SERVICE SUPPLY TO BE 500'.

3. EACH FIBER OPTIC PULL BOX SHALL INCLUDE A MINIMUM OF 20 LINEAR FEET OF GROUNDING ELECTRODE IN ACCORDANCE WITH FDOT STANDARD SPECIFICATIONS SECTION 620 AND SHALL MEET A MEASURED RESISTANCE OF 25 OHMS OR LESS. IF 25 OHMS OR LESS IS NOT OBTAINED WITH THE INITIAL 20 LINEAR FEET OF GROUNDING ELECTRODE, THEN ADDITIONAL GROUNDING ELECTRODE OR A GROUNDING ARRAY SHALL BE INSTALLED UNTIL MEASURED RESISTANCE OF 25 OHMS OR LESS IS ACHIEVED. COST FOR ADDITIONAL GROUNDING IS INCIDENTAL TO PAY ITEM 635-1-11 AND 635-1-15.

**FIBER OPTIC CABLE:**

1. THE FIBER OPTIC CABLE INSTALLATION TECHNIQUES AND PROCEDURES SHALL BE AS SPECIFIED BY THE CABLE MANUFACTURER AND SHALL BE SUCH THAT THE OPTICAL AND MECHANICAL CHARACTERISTICS OF THE CABLES ARE NOT DEGRADED AT THE TIME OF INSTALLATION. THE CENTRAL STRENGTH MEMBER AND ARAMID YARN SHALL BE ATTACHED DIRECTLY TO THE PULLING EYE DURING CABLE PULLING. "BASKET GRIP" OR "CHINESE FINGER" TYPE ATTACHMENTS TO THE CABLE OUTER TENSILE RATING SHALL BE USED ON ALL PULLS.
2. ALL FIBER OPTIC CABLE INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY STANDARDS.
3. CONTRACTOR SHALL COORDINATE WITH CFX REPRESENTATIVE PRIOR TO DISCONNECTING ANY FIBERS AND ALL FIBER SPLICING.
4. UNDER NO CIRCUMSTANCES SHALL ENERGIZED CABLE BE PLACED IN THE SAME CONDUIT OR PULL BOX AS FIBER OPTIC CABLE.

**TMS:**

1. EACH TMS SENSOR SHALL READ ONE DIRECTION OF TRAVEL AS INDICATED IN THE PLANS. THIS SHALL INCLUDE ALL LANES IN THE DIRECTION, THROUGH LANES AND RAMP LANES (IF APPLICABLE).
2. WHEN MOUNTING MORE THAN ONE SENSOR PER LOCATION, ENSURE THAT THEY ARE ON DIFFERENT CHANNELS TO AVOID INTERFERENCE.
3. USE TMS MANUFACTURER CABLE AS REQUIRED FROM SENSOR TO CONTROLLER CABINET.

**PAY ITEM NOTES:**

1. NO. 633-121-2, AND NO. 633-121-4. SEE SECTION 633 OF THE TECHNICAL SPECIFICATION FOR REQUIREMENTS.
2. NO. 635-1-11, NO. 635-1-15, AND NO. 635-1-16. SEE SECTION 635 OF THE TECHNICAL SPECIFICATIONS FOR REQUIREMENTS.
3. NO. 638-001-0211, NO. 638-001-0911, NO. 638-461-0914, & NO. 638-361-0911. SEE SECTION 638 OF THE TECHNICAL SPECIFICATIONS FOR REQUIREMENTS.
4. NO. 638-001-0911, NO. 638-361-0911, & NO. 638-461-0914. PAYMENT FOR THESE ITEMS INCLUDES FURNISHING AND INSTALLING THE ADDITIONAL 1" HDPE CONDUIT AS A DUCT FOR THE TONE WIRE. HDPE CONDUIT SHALL BE CONNECTED TO FIBER OPTIC MANHOLES ON BOTH ENDS AND SHALL MEET ALL MATERIAL REQUIREMENTS OF HDPE CONDUIT CONTAINED IN SECTION 638 OF THE TECHNICAL SPECIFICATIONS. TONE WIRE SHALL BE ENCLOSED IN 1" HDPE CONDUIT ONLY WHEN FIBER OPTIC CONDUIT BANK IS BURIED UNDER THE PAVED SHOULDER.
5. NO. 638-461-0914. ALL HARDWARE AND BRACKETS ASSOCIATED WITH BRIDGE-MOUNTED BRFG SHALL BE INCIDENTAL TO THE COST OF BRFG.

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				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

PAY ITEM NOTES (CONTINUED)

6. NO. 639-X-X  
SHALL INCLUDE AND PAY FOR RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE REQUIRED DISCONNECTS AND OTHER COMPONENTS NECESSARY FOR AN ACCEPTABLE INSTALLATION PER THE LATEST DUKE ENERGY STANDARDS. THE POWER SERVICE DETAILS IN THESE PLANS SHOULD BE CONSIDERED THE MINIMUM REQUIREMENTS AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO MEET ALL LOCAL REQUIREMENTS FOR A FULLY FUNCTIONAL INSTALLATION (I.E. CIRCUIT BREAKERS, PHOTO CELLS, ETC.) SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THIS PAY ITEM.

7. NO. 663-74-1XX.  
SHALL INCLUDE ALL ADDITIONAL COMPONENTS AND ACCESSORIES NECESSARY TO COMPLETE A FULLY FUNCTIONAL INSTALLATION. THE WIRING DIAGRAMS ARE CONSIDERED THE MINIMUM REQUIRED EQUIPMENT AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLETING A FULLY FUNCTIONAL INSTALLATION. ALL REQUIRED EQUIPMENT NOT PAID FOR BY A SEPARATE PAY ITEM NO. SHALL BE INCLUDED IN THIS ITEM.

8. NO. 664-I-XXX.  
SHALL INCLUDE ALL ADDITIONAL COMPONENTS, CABLING, AND ACCESSORIES NECESSARY TO COMPLETE A FULLY FUNCTIONAL TMS INSTALLATION. THE WIRING DIAGRAMS ARE CONSIDERED THE MINIMUM REQUIRED EQUIPMENT AND DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF COMPLETING A FULL FUNCTIONAL INSTALLATION. ALL REQUIRED EQUIPMENT NOT PAID FOR BY A SEPARATE PAY ITEM NO. SHALL BE INCLUDED IN THIS ITEM, THIS INCLUDES THE 4' CANTILEVER ARM AS SHOWN IN THE PLANS. TMS SENSORS SHALL BE MOUNTED PER MANUFACTURER'S USER GUIDE.

9. NO. 678-I-III.  
ALL TRANSFORMERS SHALL BE RATED FOR OUTDOOR USE AND HAVE THE APPROPRIATE LUGS FOR 120, 240 AND 480 SERVICES PER THE POWER SERVICE DETAILS. TRANSFORMERS ARE TO INCLUDE WINDING TAPES (2 1/2 +/-).

10. NO. 715-7-II  
THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE CONCRETE SERVICE POLE, METER BASE, SERVICE POLE INSULATORS, WEATHERHEADS, FUSES, PANEL BOARD, LIGHTNING PROTECTION ON THE OUTSIDE OF THE ENCLOSURE, BREAKERS, CONDUIT AND FEEDER CONDUCTORS FROM THE POWER COMPANY POINT OF SERVICE TO DMS POWER SERVICE, PULL BOX AND OTHER MISCELLANEOUS HARDWARE FOR A COMPLETE INSTALLATION PER PLANS AND STANDARD INDEX NO. 17504. THIS LOAD CENTER SHALL NOT INCLUDE A PHOTOCELL SINCE THE POWER SHALL BE CONTINUOUS FOR THE ITS DEVICES. CONTRACTOR TO INCLUDE ALL FEES FOR INSPECTION OF CONNECTION OF THE ELECTRICAL SERVICE. DUKE ENERGY OR OUC WILL PROVIDE THE PAD MOUNTED TRANSFORMER AND METER. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A MINIMUM COVER OF 36" FOR THE 2" CONDUIT (WITH PULL STRINGS) FOR THE SECONDARY SERVICE FEEDER. ALSO, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SURE THE CABLE ROUTE AND TRANSFORMER PAD LOCATION ARE AT THEIR FINAL GRADE AND COMPACTION PRIOR TO DUKE ENERGY OR OUC DOING THEIR WORK.

NO. 4210-II, 4210-12 AND 4210-13.  
SEE SECTION 636 OF THE TECHNICAL SPECIFICATION FOR REQUIREMENTS.

UTILITIES NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE POWER COMPANY AT LEAST 48 HOURS PRIOR TO ANY INSTALLATION THAT IS WITHIN 20 FEET OF ENERGIZED ELECTRICAL CONDUCTORS. THE POWER COMPANY, AT ITS OPTION, SHALL ASSIST THE CFX CONTRACTOR, COVER UP ENERGIZED CONDUCTORS AT INSTALLATION SITE, OR TAKE OTHER SAFETY PRECAUTIONS AS NECESSARY. EXTREME CAUTION SHALL BE EXERCISED AT ALL TIMES IN PERFORMANCE OF WORK AROUND THE PRIMARY HIGH VOLTAGE COMPONENTS.

2. THE LOCATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, ARE APPROXIMATE AND BASED ON THE INFORMATION FURNISHED TO THE ENGINEER BY THE UTILITY OWNER(S) AND ARE SHOWN AS NOTICE TO THE CONTRACTOR THAT UNDERGROUND UTILITIES EXIST. BEFORE EXCAVATING THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANY OWNER(S) AND REQUEST THEM TO LOCATE AND STAKE THEIR UNDERGROUND FACILITIES. UTILITIES ARE TO BE ADJUSTED BY OTHERS AS DIRECTED BY THE ENGINEER.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING UNDERGROUND UTILITIES VERTICALLY AND HORIZONTALLY (VVH) FOR ALL CONDUIT INSTALLATIONS. THE COST FOR THE VVH'S SHALL BE INCLUDED IN THE COST OF THE CONDUIT. WHEN BORING UNDER PAVEMENT, THE CONTRACTOR SHALL VERIFY DEPTH BY POT HOLING PRIOR TO SHOOTING THE BORE. ANY OTHER METHOD MUST BE APPROVED BY THE ENGINEER.

4. CONTRACTOR SHALL STAKE ALL POLE LOCATIONS AND REQUEST UTILITY COMPANIES TO LOCATE AND STAKE UNDERGROUND UTILITIES PRIOR TO EXCAVATING.

5. CONTRACTOR SHALL OBSERVE OSHA CLEARANCE REGULATIONS WHEN WORKING IN CLOSE PROXIMITY TO OVERHEAD POWER LINES.

6. CONTRACTOR SHALL LOCATE AND PROTECT EXISTING CFX OWNER FIBER OPTIC CABLES AND BURIED ELECTRICAL LINES DURING THE INSTALLATION OF NEW CONDUIT AND PULL BOXES.

POWER CONNECTIONS:

POWER SUPPLY LOCATIONS HAVE BEEN COORDINATED WITH DUKE ENERGY. IT IS RECOMMENDED THAT THE CONTRACTOR CONTACT THE RESPECTIVE POWER COMPANY CONTACT PERSON AS SOON AS POSSIBLE TO ENSURE ALL POWER SOURCES CAN BE INSTALLED AS SHOWN IN THE PLANS OR IN THE EVENT A PROPOSED POWER SOURCE IS NOT READILY AVAILABLE.

1. DUKE ENERGY SERVICE: CONTRACTOR TO RUN UNDERGROUND CONDUIT TO THE BASE OF PEDESTAL THAT EXISTS OR CONTRACTOR INSTALLS AND SET A PULL BOX WITH APPROX. 10' OF ELECTRICAL SERVICE WIRE COILED INSIDE. CONTACT DUKE ENERGY NEW CONSTRUCTION AT 866-372-4663 FOR FINAL CONNECTION BY DUKE ENERGY PERSONNEL.

CONNECTIONS TO EXISTING POWER METERS TO BE ACCOMPLISHED PER STATE AND LOCAL CODES. CONTRACTOR'S ELECTRICIAN TO PRE-EXAMINE EACH SITE TO DETERMINE THE FEASIBILITY OF CONNECTION TO THE PROPOSED POWER SOURCE. CONNECTIONS MUST BE MADE THROUGH AN EXISTING OR NEW BREAKER PANEL WITH THE APPROPRIATE CIRCUIT BREAKER. ALL MATERIALS, EQUIPMENT AND LABOR TO BE SUPPLIED FOR A COMPLETE CONNECTION AND IS TO BE PAID UNDER PAY ITEM NUMBER 639-I-12 AND 639-I-22.

FIBER CABLE AND CONNECTION DISTRIBUTION:

BACKBONE CABLE

- 9-1" HDPE CONDUITS WITH 72-STRAND FIBER CABLE IN ORANGE CONDUIT FOR BACKBONE TRUNK CABLE AND 72-STRAND FIBER CABLE IN BLUE CONDUIT FOR FEEDER TRUNK CABLE. TONE WIRE AND TONE WIRE CONDUIT SHALL BE INCLUDED AS REQUIRED.

FEEDER CABLE

- 2-1" BLUE AND ORANGE HDPE CONDUITS W/ 1-12 STRAND FIBER CABLE IN BLUE CONDUIT FOR FEEDER CABLE. TONE WIRE AND TONE WIRE CONDUIT SHALL BE INCLUDED AS REQUIRED.

SECONDARY FEEDER CABLE

- 2-1" BLUE AND ORANGE HDPE CONDUITS W/ 1-72 STRAND FIBER CABLE IN BLUE CONDUIT FOR FEEDER CABLE. TONE WIRE AND TONE WIRE CONDUIT SHALL BE INCLUDED AS REQUIRED.

SPECIAL NOTES:

1. SECTION 631 OF THE TECHNICAL SPECIAL PROVISIONS ESTABLISHES THE GENERAL REQUIREMENTS FOR THE PROTECTION AND LOCATION OF THE EXISTING CFX FIBER OPTIC (FON) NETWORK SYSTEM.

2. THE CONTRACTOR SHALL PROCURE THE NECESSARY EQUIPMENT FOR LOCATING THE EXISTING FON. THIS EQUIPMENT SHALL BE COMPATIBLE WITH THE EXISTING RADIO DETECTION LINE MANAGEMENT SYSTEM (LMS). THE CONTRACTOR SHALL SUBMIT THE NAME, MAKE AND MANUFACTURER FOR THE PROPOSED EQUIPMENT FOR APPROVAL. PAYMENT FOR THIS EQUIPMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM NO. 102-I, MAINTENANCE OF TRAFFIC. THE CONTRACTOR SHALL SUBMIT A PLAN FOR CFX APPROVAL WHICH ESTABLISHES THE NEW LMS SYSTEM.

3. THE CONTRACTOR SHALL IDENTIFY AN INDIVIDUAL FROM THE CONTRACTOR'S STAFF OR SUBCONTRACTOR'S STAFF TO BE RESPONSIBLE FOR THE PROTECTION AND LOCATING OF THE EXISTING FON DURING THIS CONSTRUCTION PROJECT. QUALIFICATIONS OF THIS INDIVIDUAL SHALL BE SUBMITTED FOR CFX APPROVAL

4. CONTINUOUS OPERATION OF EXISTING CCTV CAMERAS SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, EXCEPT DURING RELOCATION WHEN PAY ITEM FOOTNOTE 685-3 APPLIES.

5. CONTINUOUS OPERATION OF EXISTING ITS DEVICES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION, EXCEPT DURING RELOCATION OF DEVICE, AS GOVERNED BY SECTION 603A.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

# UTILITY CONTACTS

UTILITY LOCATES PROVIDED BY NO-CUTS 1-800-432-4770

CENTURY LINK  
CITY OF APOPKA  
FLORIDA CABLE TELEVISION  
COMCAST COMMUNICATIONS  
LAKE APOPKA NATURAL GAS  
DUKE ENERGY FLORIDA TRANSMISSION  
DUKE ENERGY FLORIDA DISTRIBUTION

WADE RICH  
VLADIMIR SIMONOVSKI  
LARRY ENGLISH  
SCOTT OSEBOLD  
RICK GULLETT  
ED BURKOT  
MIKE EDKIN

407-814-5383  
407-703-1731  
352-759-2788  
352-315-8527  
407-656-2737 EXT. 108  
407-942-9231  
321-228-5156

# OTHER CONTACTS

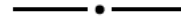
ORANGE COUNTY TRAFFIC ENGINEERING 1-407-836-7890

### ABBREVIATIONS

BRFG = BULLET RESISTIVE FIBERGLASS OUTER DUCT  
BSP = BLACK STEEL PIPE POLYETHYLENE CONDUIT  
HDPE = HIGH DENSITY POLYETHYLENE CONDUIT  
DCS = DATA COLLECTION SENSOR  
DMS = DYNAMIC MESSAGE SIGN  
FO = FIBER OPTIC  
FOMH = FIBER OPTIC MANHOLE  
PVC = POLYVINYL CHLORIDE OUTER DUCT  
E/W = EQUIPPED WITH  
SDR = SIZE DIMENSION RATIO  
COND.1 = CONDITION 1 CROSSING (SEE FIBER OPTIC TRENCHING DETAILS)  
COND.2 = CONDITION 2 CROSSING (SEE FIBER OPTIC TRENCHING DETAILS)  
COND.3 = CONDITION 3 CROSSING (SEE FIBER OPTIC TRENCHING DETAILS)  
TMS = TRAFFIC MONITORING STATION  
EPB = ELECTRICAL PULL BOX  
FOPB = FIBER OPTIC PULL BOX  
FOSB = FIBER OPTIC SPLICE BOX

# LEGEND

PROPOSED UNDERGROUND SPARE POWER  
2" SCHEDULE 40 P.V.C UNDERGROUND CONDUIT  
WITH AWG THWN STRANDED COPPER CIRCUIT  
INSULATED CONDUCTORS INSIDE (CONDUCTOR  
AND GROUND WIRE SIZES SHOWN ON DETAIL  
SHEETS) AND INSULATED GREEN STRANDED CU  
BOND WIRE CONNECTING ALL ITEMS.



PROPOSED UNDERGROUND SPARE CONDUIT  
2" SCHEDULE 40 PVC UNDERGROUND CONDUIT  
WITH PULL STRING.



1-4" SCHEDULE 40 PVC WITH  
PROPOSED 2-1" FIBER OPTIC  
HDPE CONDUIT - SDR 11.



POLE MOUNTED CABINET AND  
ANCILLIARY ELECTRICAL EQUIPMENT.  
SEE IT-53 FOR DETAILS.  
CABINET TO BE SIZED BY CONTRACTOR.



PROPOSED CONCRETE POLE WITH DISCONNECT



PROPOSED LOAD CENTER



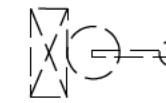
OVERHEAD SIGN TRUSS AND STATIC  
SIGN PANELS TO BE INSTALLED BY  
SIGNING AND MARKING CONTRACTOR  
AS PART OF THE SIGNING AND  
PAVEMENT MARKING PLAN SET.



PROPOSED TMS



PROPOSED TMS DETECTION ZONES (SYMBOL SHOULD  
BE PLACED OVER EACH LANE DETECTED)



EXISTING POLE MOUNTED CABINET & CAMERA W/  
LOWERING SYSTEM ON STEEL POLE W/ FOUNDATION



RELOCATED POLE MOUNTED CABINET & CAMERA W/  
LOWERING SYSTEM ON STEEL POLE W/ NEW FOUNDATION



EXISTING FIBER OPTIC ROUND PULL BOX  
(OPENING 36", BASE 44"x24" DEEP)



PROPOSED FIBER OPTIC ROUND PULL BOX  
(OPENING 36", BASE 44"x24" DEEP)



EXISTING PULL BOX (13"x24"x12"D)



PULL BOX (13"x24"x12"D)



EXISTING FIBER OPTIC PULL BOX (17"x30"x12"D)



FIBER OPTIC PULL BOX (17"x30"x12"D)



EXISTING CONCRETE PEDESTAL FOR POWER SERVICE.



PROPOSED CONCRETE PEDESTAL  
FOR POWER SERVICE.



EXISTING FIBER OPTIC MANHOLE



FIBER OPTIC MANHOLE (4'x4'x4')



FIBER OPTIC MANHOLE (4'x6.5'x6.5')



FIBER OPTIC MANHOLE WITH STUBOUT (4'x4'x4')



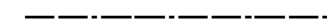
FIBER OPTIC MANHOLE WITH STUBOUT (4'x6.5'x6.5')



6" BLACK STEEL PIPE (BSP) E/W 9-1" HDPE CONDUITS



1-6" BULLET RESISTIVE FIBERGLASS (BRFG)  
CONDUIT ATTACHED TO BRIDGE E/W HDPE 9-1" CONDUITS



6" PVC, SCHEDULE 40 E/W 9-1" HDPE



2-1" HDPE CONDUITS (FEEDER)



9-1" HDPE CONDUITS (BACKBONE)



6" SPLIT BLACK STEEL PIPE (BSP) E/W HDPE CONDUITS



EXISTING 9-1" HDPE CONDUITS



EXISTING BLACK STEEL PIPE (BSP)



DATA COLLECTION SENSOR ANTENNA SITE  
(# INDICATES NUMBER OF LANES READ)

### REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

Traffic Engineering Data Solutions, Inc.

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DeBary, FL 32713 Fax: 386.753.0778

CERTIFICATION OF AUTHORIZATION # 27392

ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
FL REGISTRATION NO. 41902

CENTRAL FLORIDA  
EXPRESSWAY AUTHORITY

ROAD NO.	PROJECT NO.
SR 429	429-202

CENTRAL  
FLORIDA  
EXPRESSWAY  
AUTHORITY

ITS LEGEND AND  
UTILITY CONTACTS

SHEET  
NO.

IT-7

































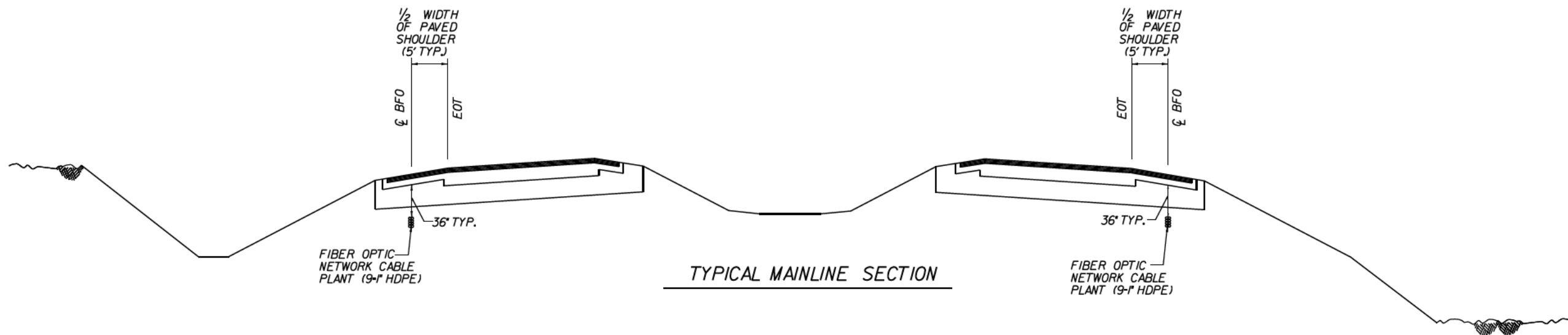




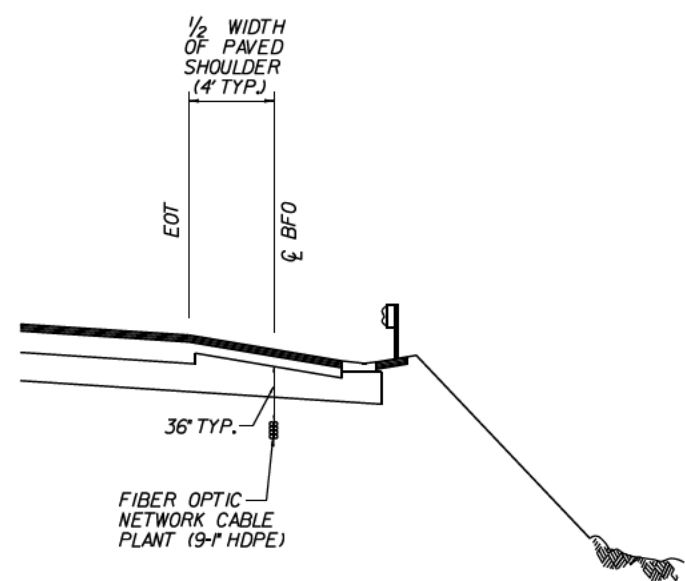




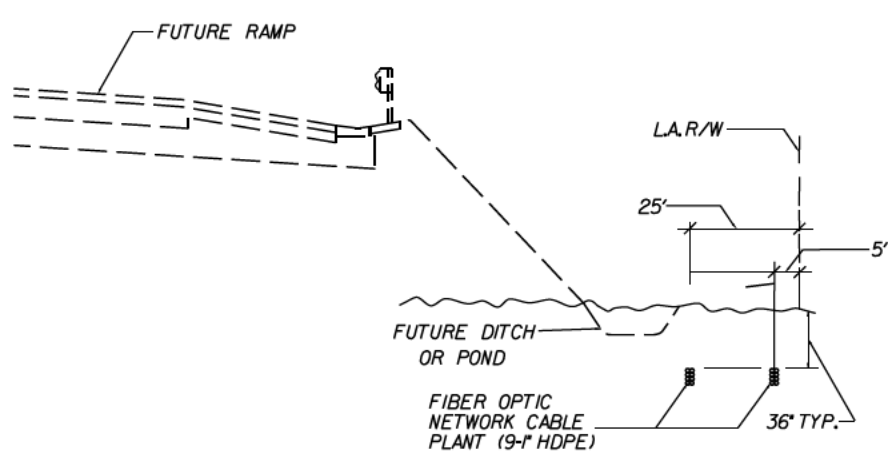




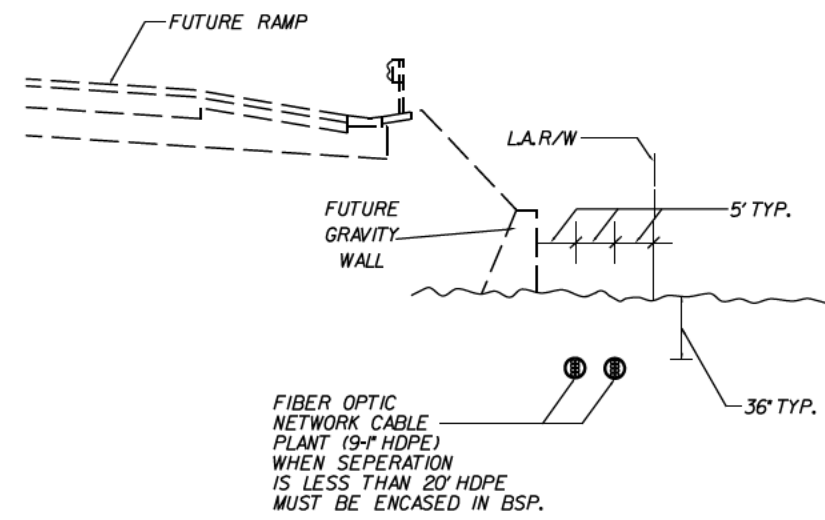
TYPICAL MAINLINE SECTION



TYPICAL MAINLINE/RAMP SECTION WITH GUARDRAIL



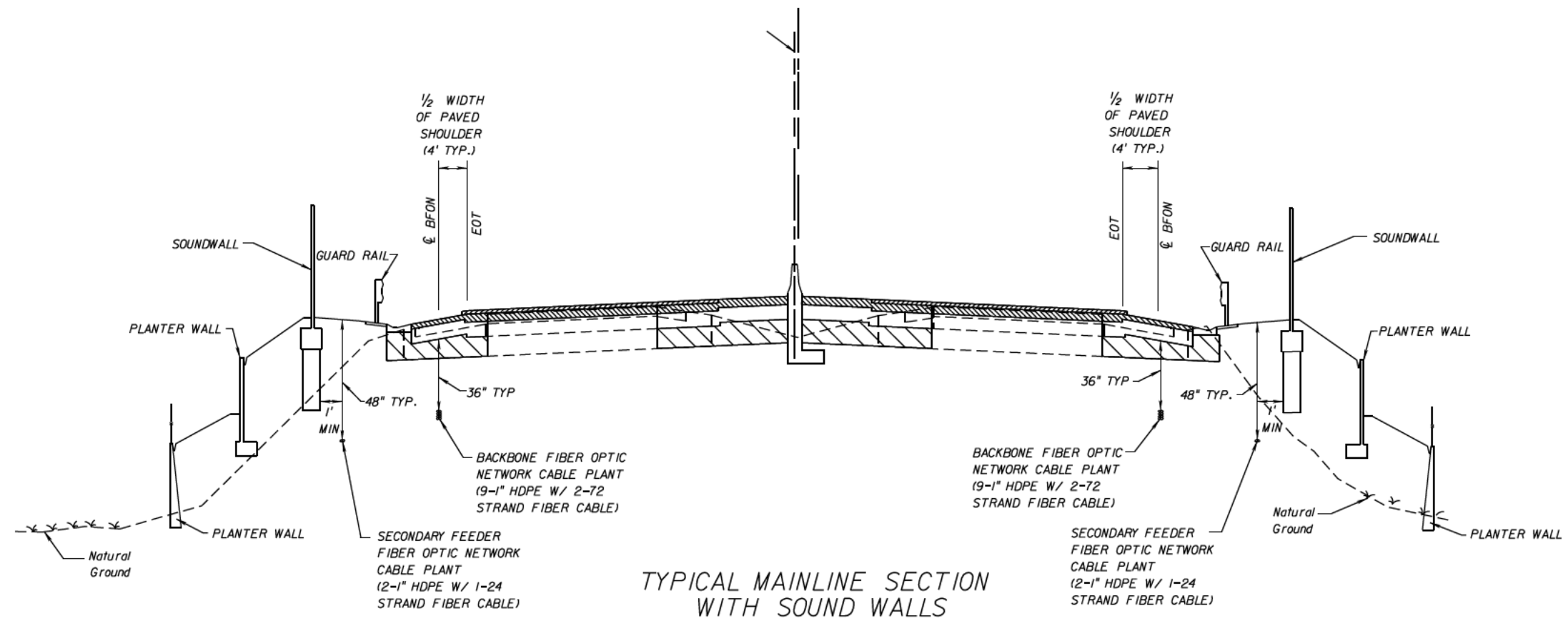
TYPICAL FUTURE RAMP SECTION WITH FIBER OPTIC NETWORK NEAR L.A.R/W



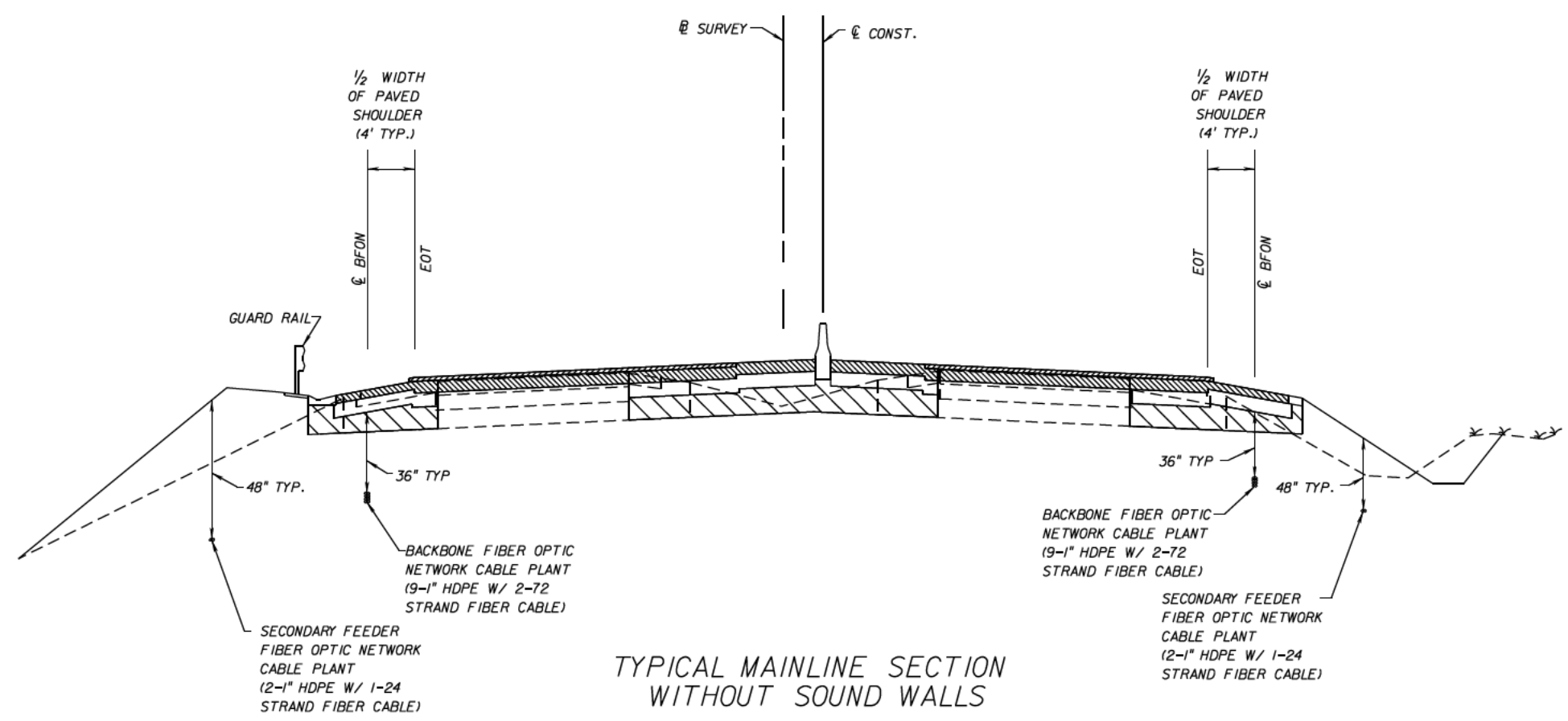
TYPICAL FUTURE RAMP SECTION WITH GRAVITY WALL & FIBER OPTIC NETWORK NEAR L.A.R/W

NOTE: WHEN FIBER OPTIC CONDUIT BANK IS INSTALLED UNDER PAVEMENT, ONE ADDITIONAL 1\"/>

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	<b>SR 429</b>	<b>429-202</b>			



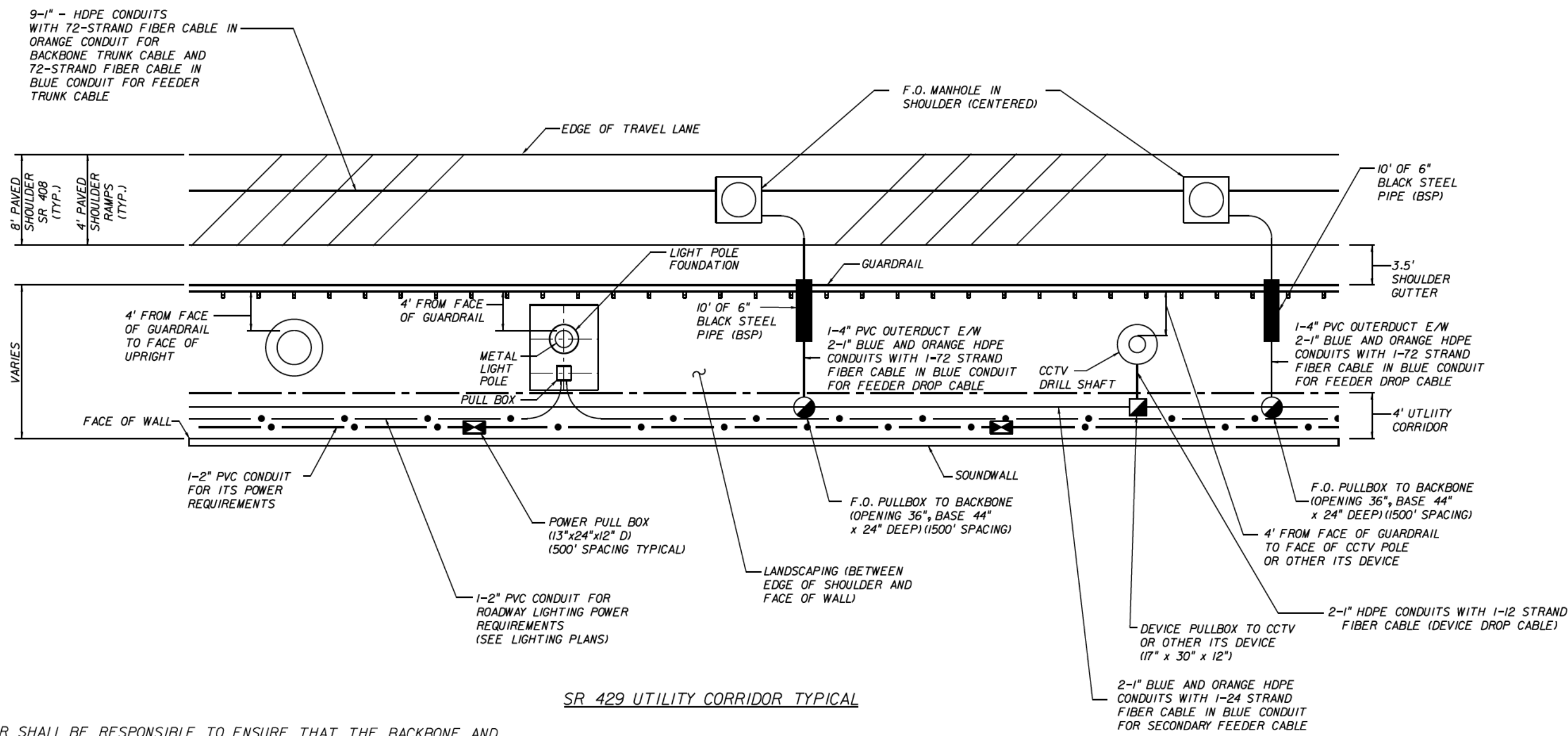
TYPICAL MAINLINE SECTION WITH SOUND WALLS



TYPICAL MAINLINE SECTION WITHOUT SOUND WALLS

NOTE: WHEN FIBER OPTIC CONDUIT BANK IS INSTALLED UNDER PAVEMENT, ONE ADDITIONAL 1" HDPE CONDUIT SHALL BE INSTALLED TO SLEEVE THE TONE WIRE. 8 HDPE CONDUITS SHALL BE RESERVED TO FIBER OPTIC CABLE.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					

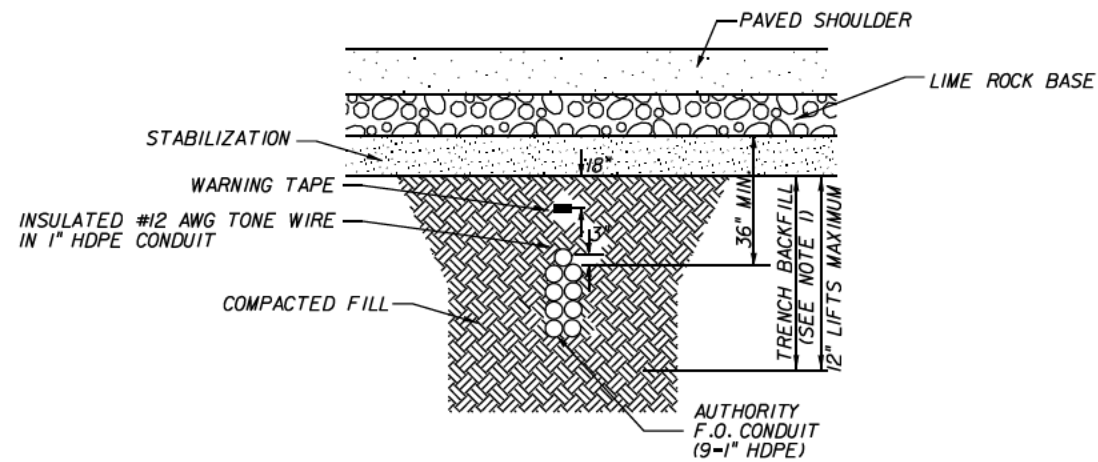


SR 429 UTILITY CORRIDOR TYPICAL

NOTES:  
 1. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT THE BACKBONE AND FEEDER FIBER CABLES ARE AT THE PROPER DEPTHS AS SPECIFIED IN THIS TYPICAL DETAIL. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE TO INSTALL THE BACKBONE AND SECONDARY FEEDER IN CONFLICT AREAS (DRAINAGE, ETC) PER UTILITY CROSSING DETAIL SHEETS.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					

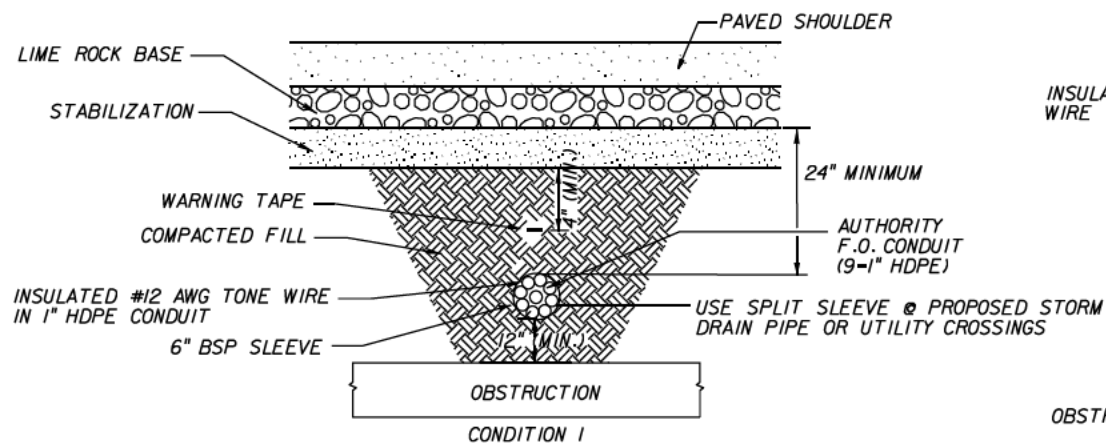




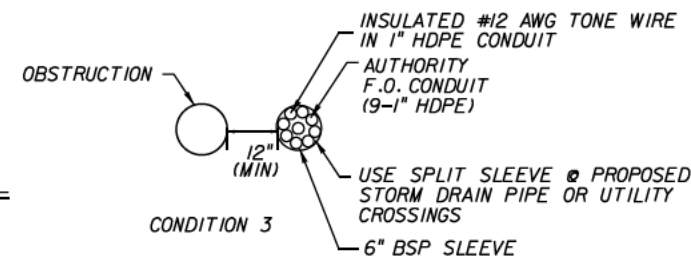
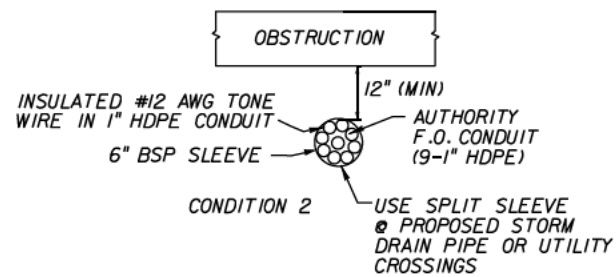
**NOTES:**

1. TRENCH BACKFILL: COMPACTED TO 100% OF THE MAXIMUM DENSITY AS PER AASHTO T-99.
2. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION
3. THE F.O. CONDUIT SHALL BE INSTALLED SUCH THAT IT MAINTAINS A SUBSTANTIALLY UNIFORM ALIGNMENT (+/- 4 INCHES) BOTH HORIZONTALLY AND VERTICALLY RELATIVE TO THE PAVED SHOULDER AS DETAILED IN THE TYPICAL MAINLINE SECTION.

**DETAIL "A"**  
**TYPICAL BEDDING AND TRENCHING DETAIL**  
NTS

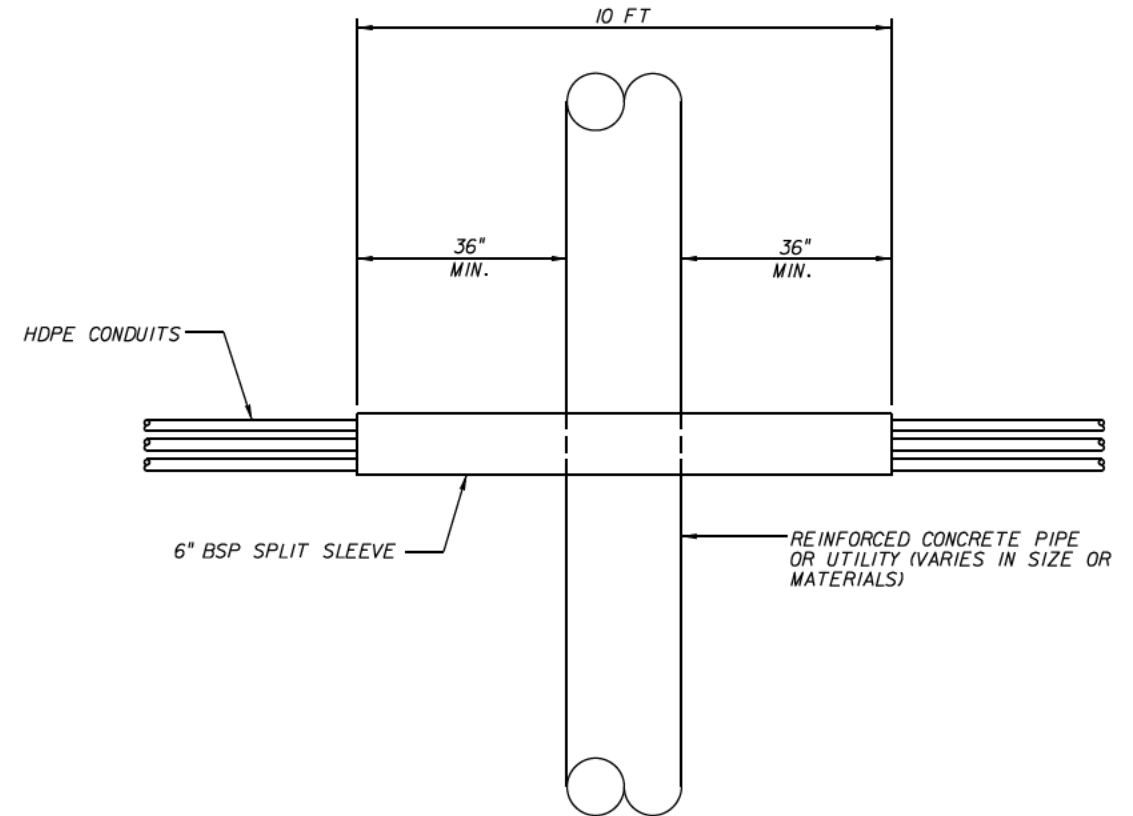


**DETAIL "B"**  
**TYPICAL STEEL SLEEVE TRENCH DETAIL TO CROSS OBSTRUCTION**  
NTS



**NOTES:**

1. TRENCH BACKFILL: COMPACTED TO 100% OF THE MAXIMUM DENSITY AS PER AASHTO T-99.
2. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION
3. BLACK STEEL PIPE (BSP) SLEEVE TO EXTEND A MIN. OF 3' PAST ENDS OF OBSTRUCTION.
4. 6" BSP SLEEVE SHALL BE SEALED AT BOTH ENDS WITH THE F.O. CONDUITS TO PREVENT THE INFILTRATION OF SURROUNDING FILL. METHOD AND MATERIALS TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
5. F.O. CONDUITS MAY ALSO BE ROUTED UNDER OBSTRUCTIONS AS SHOWN IN CONDITION 2, IF MINIMUM COVERS SHOWN IN CONDITION 1 CANNOT BE MET.
6. PROPOSED OBSTRUCTION CROSSING PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. OBSTRUCTION CROSSINGS ARE LABELED ON THE PLAN SHEETS AS COND. 1 FOR A CONDITION 1 CROSSING, COND. 2 FOR A CONDITION 2 CROSSING, OR COND. 3 FOR A CONDITION 3 CROSSING.
8. DURING ALL HDPE INTERDUCT INSTALLATION INSIDE PVC, BSP, BRFG CONDUIT THE CONTRACTOR SHALL USE POLYMER FRONT END PACKS, PART NUMBERS J-27 OR J-55, AS APPROPRIATE, OR APPROVED EQUIVALENT AS PULLING LUBRICANT.
9. TONE WIRE ONLY INSTALLED IN DEDICATED 1" HDPE CONDUIT WHEN F.O. CONDUIT BANK IS INSTALLED UNDER PAVEMENT.



**DETAIL "C"**  
**SPLIT SLEEVE PLAN DETAIL AT STORM DRAIN PIPE OR UTILITY CROSSINGS**  
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

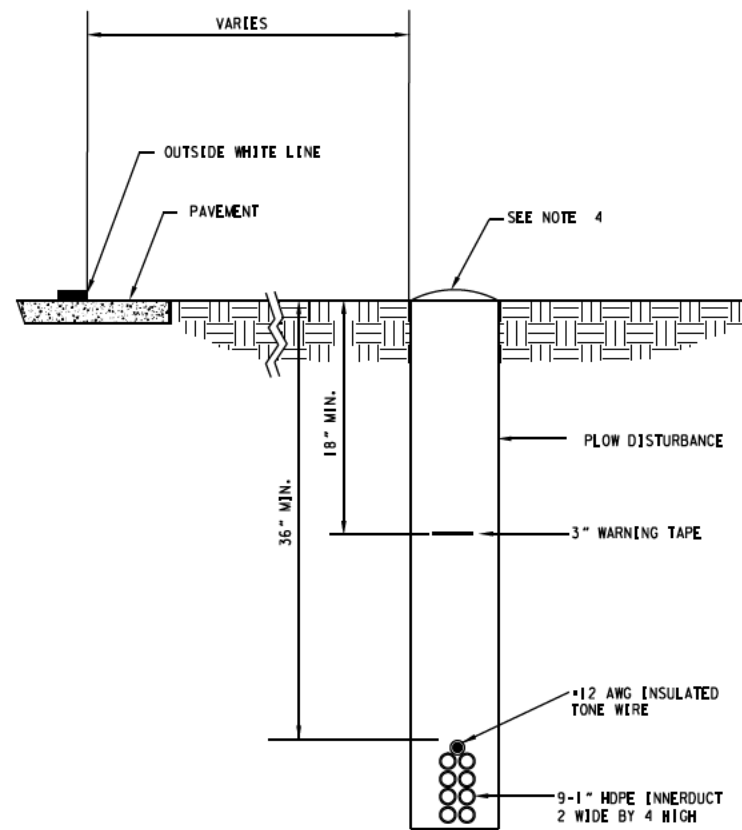
Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive Phone: 386.753.0558  
DeBary, FL 32713 Fax: 386.753.0778  
CERTIFICATION OF AUTHORIZATION # 27392  
ENGINEER OF RECORD: FRED D. FERRELL, P.E  
FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
ROAD NO. SR 429  
PROJECT NO. 429-202

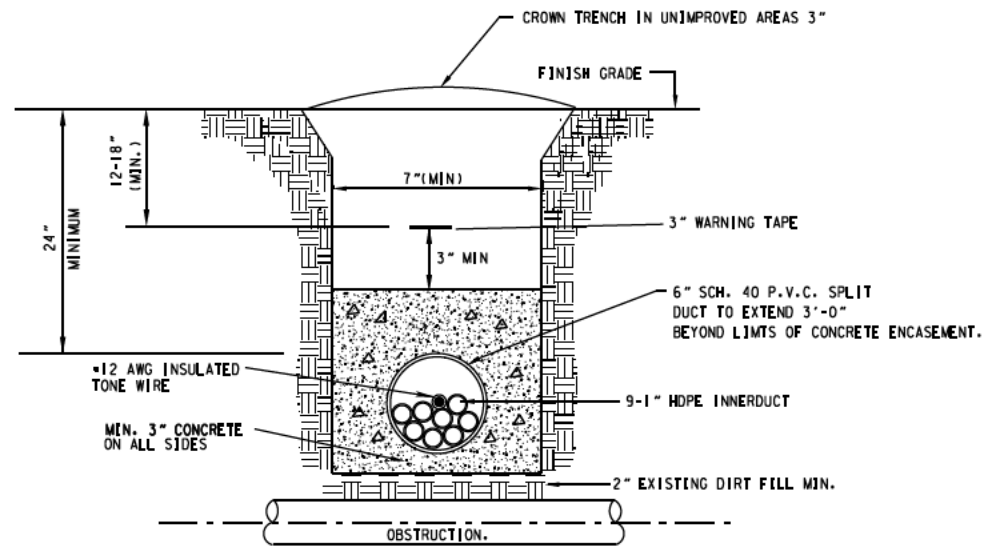
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**ITS NETWORK TRENCHING DETAILS**

SHEET NO. IT-29



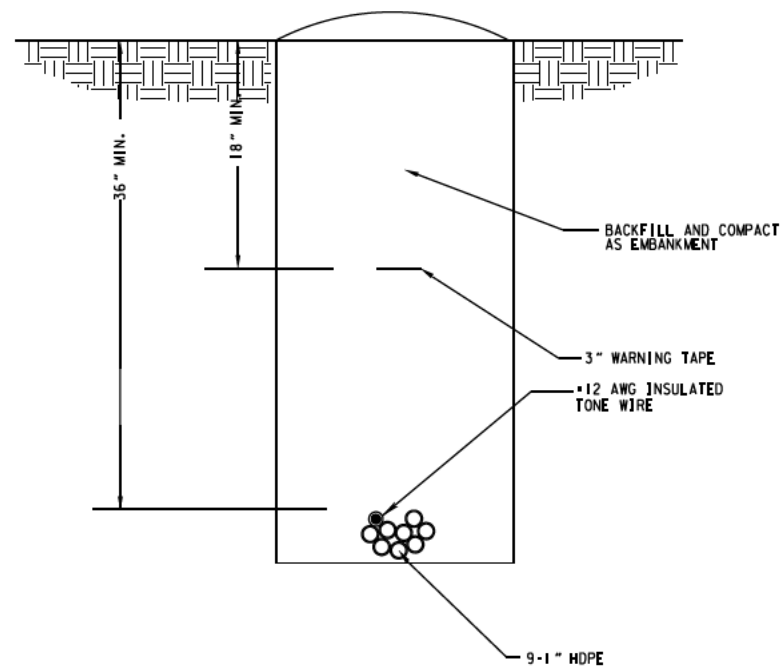
STANDARD CROSS SECTION OF PLOWED CONDUIT  
N.T.S.



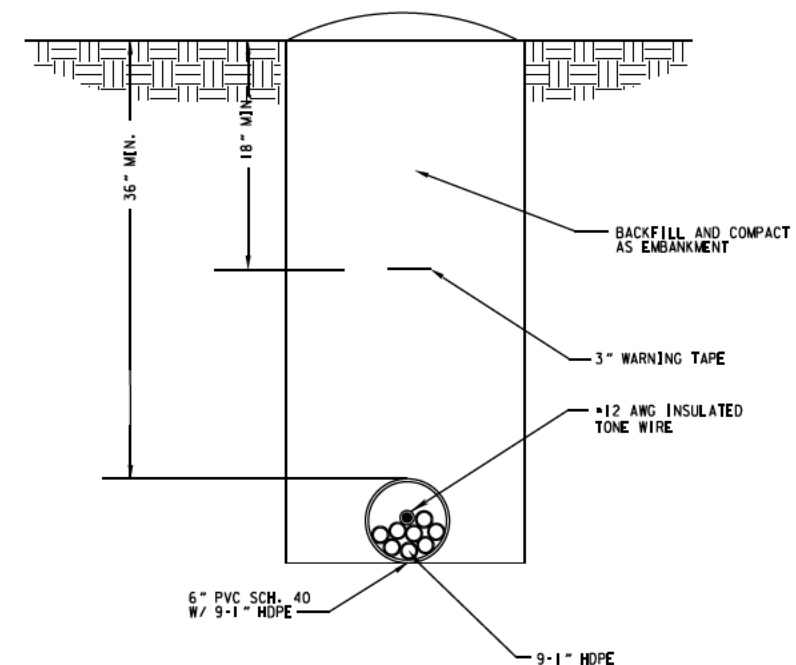
TYPICAL CROSSING WHERE OBSTRUCTION IS 35" TO 44" IN DEPTH.  
N.T.S.

GENERAL NOTES:

1. TRAFFIC CONTROL FOR LONGITUDINAL INSTALLATION SHALL BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD INDEX SERIES 600.
2. A MINIMUM OF 2'-0" SHALL BE MAINTAINED FROM EXISTING LANDSCAPE FEATURES. LANDSCAPE REPLACEMENT SHALL BE IN KIND AND SUBJECT TO THE APPROVAL OF THE OWNER.
3. REPLACEMENT OF FILL, BASE, SURFACE (ASPHALT), CURB AND DRAINAGE STRUCTURES WILL BE IN ACCORDANCE WITH ORANGE COUNTY UTILITY AND PUBLIC WORKS STANDARDS FOR COUNTY ROADS AND THE LATEST FDOT UTILITY ACCOMMODATION MANUAL.
4. CONSTRUCTION CORRIDOR SHALL BE RESTORED TO ORIGINAL OR IMPROVED CONDITION.
5. ALL TRENCH WIDTHS SHALL BE WIDE ENOUGH TO ACCOMMODATE MECHANICAL COMPACTION EQUIPMENT FOR PROPER COMPACTION IN ACCORDANCE WITH FDOT STANDARD SPECS.
6. ALL TRENCHES SHALL BE BACKFILLED & COMPACTED BY THE END OF EACH WORK DAY.
7. JOINT COUPLINGS WILL BE USED AS NECESSARY.
8. CONDUIT PATH WILL BE ROUTED TO AVOID ANY OBSTRUCTIONS SHOULD OBSTRUCTIONS BE ENCOUNTERED, THE FOLLOWING HIRARCHY WILL BE STRICTLY ADHERED TO:
  - a. ROUTE CONDUIT AROUND OBSTRUCTION USING SWEEPING BENDS.
  - b. IF a. CANNOT BE ACCOMPLISHED, CONDUIT ROUTING WILL BE MADE UNDER THE OBSTRUCTION.
  - c. IF a OR b CANNOT BE ACCOMPLISHED, THEN CONCRETE ENCASEMENT OR BLACK STEEL PIPE SHALL BE ALLOWED PER ADJACENT.
9. ALL CONCRETE SHALL BE FDOT APPROVED CLASS 1.

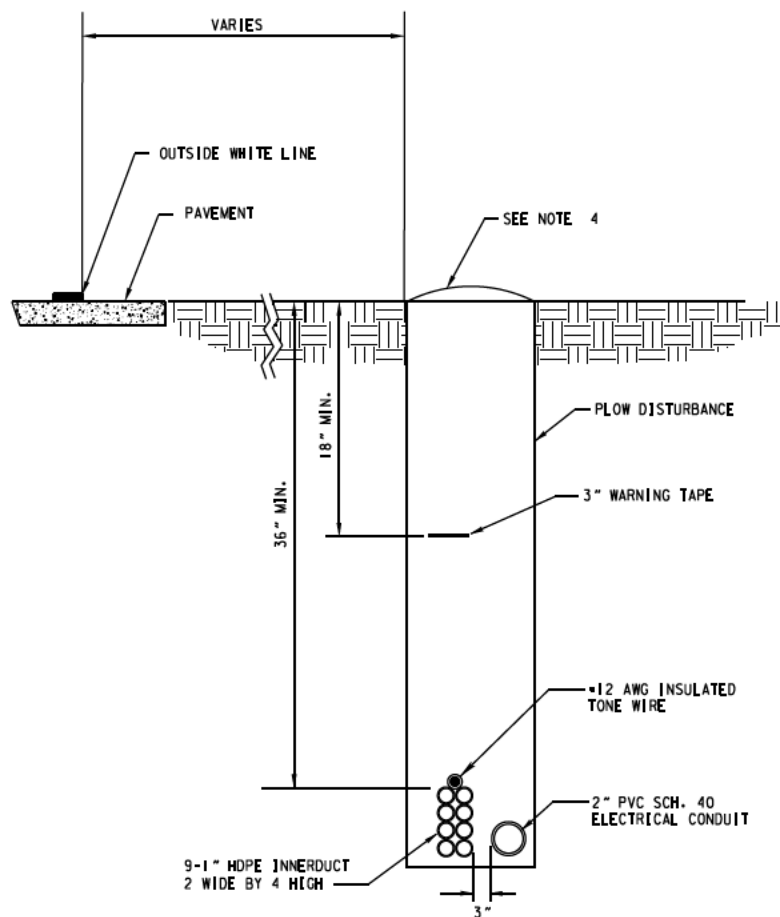


STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (NOT IN CASING)  
N.T.S.

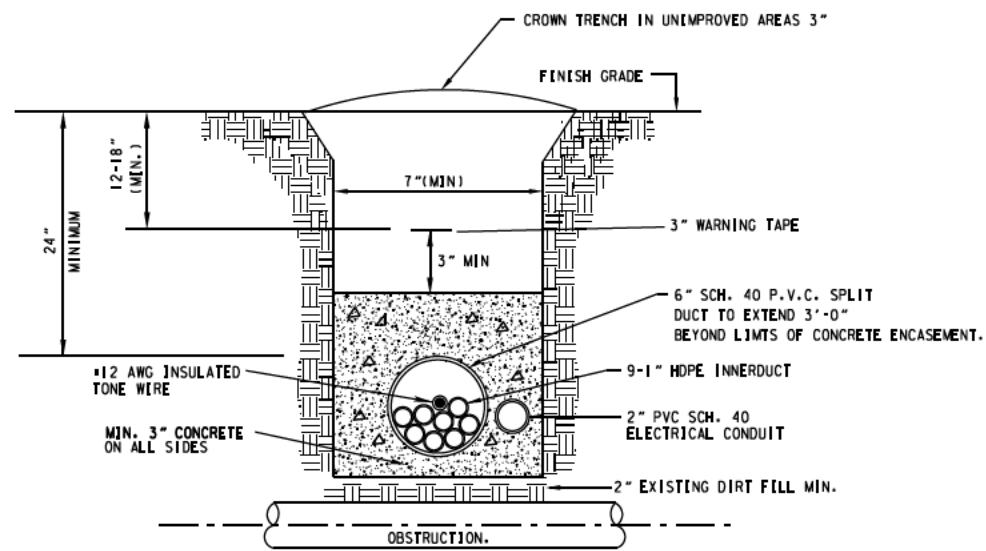


STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (IN CASING)  
N.T.S.

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ITS NETWORK TRENCHING DETAILS	SHEET NO. IT-30
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					



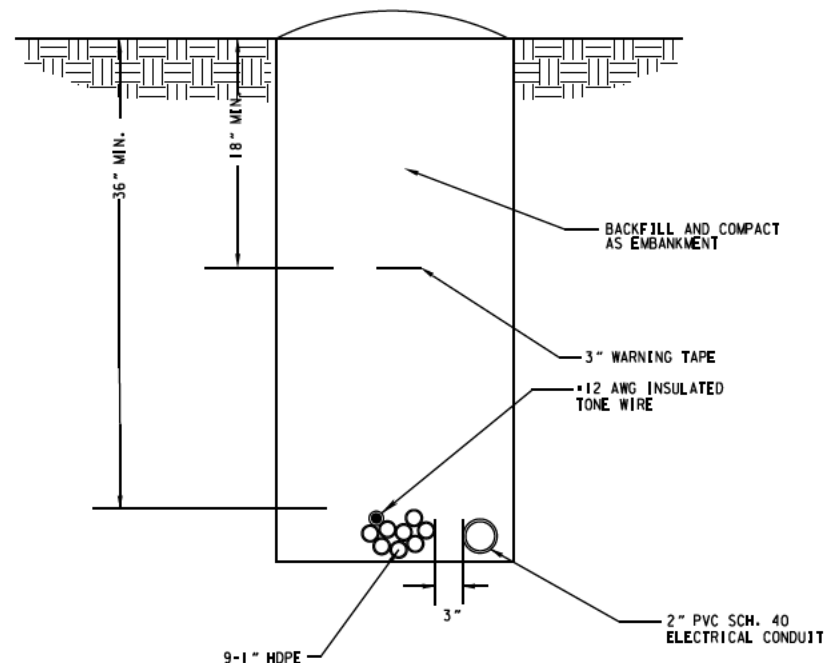
STANDARD CROSS SECTION OF PLOWED CONDUIT  
N.T.S.



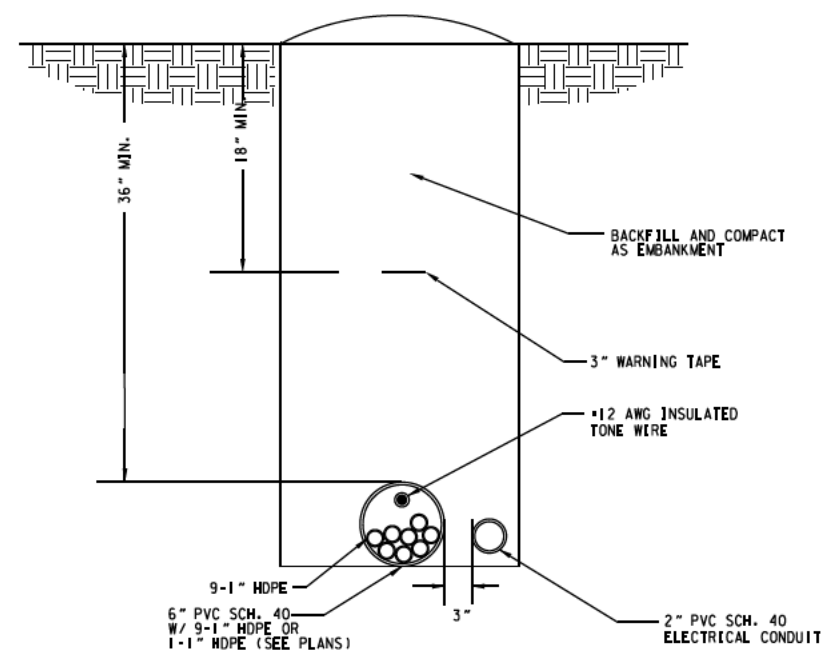
TYPICAL CROSSING WHERE OBSTRUCTION IS 35" TO 44" IN DEPTH.  
N.T.S.

**GENERAL NOTES:**

1. TRAFFIC CONTROL FOR LONGITUDINAL INSTALLATION SHALL BE IN ACCORDANCE WITH FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD INDEX SERIES 600.
2. A MINIMUM OF 2'-0" SHALL BE MAINTAINED FROM EXISTING LANDSCAPE FEATURES. LANDSCAPE REPLACEMENT SHALL BE IN KIND AND SUBJECT TO THE APPROVAL OF THE OWNER.
3. REPLACEMENT OF FILL, BASE, SURFACE (ASPHALT), CURB AND DRAINAGE STRUCTURES WILL BE IN ACCORDANCE WITH ORANGE COUNTY UTILITY AND PUBLIC WORKS STANDARDS FOR COUNTY ROADS AND THE LATEST FDOT UTILITY ACCOMMODATION MANUAL.
4. CONSTRUCTION CORRIDOR SHALL BE RESTORED TO ORIGINAL OR IMPROVED CONDITION.
5. ALL TRENCH WIDTHS SHALL BE WIDE ENOUGH TO ACCOMMODATE MECHANICAL COMPACTION EQUIPMENT FOR PROPER COMPACTION IN ACCORDANCE WITH FDOT STANDARD SPECS.
6. ALL TRENCHES SHALL BE BACKFILLED & COMPACTED BY THE END OF EACH WORK DAY.
7. JOINT COUPLINGS WILL BE USED AS NECESSARY.
8. CONDUIT PATH WILL BE ROUTED TO AVOID ANY OBSTRUCTIONS SHOULD OBSTRUCTIONS BE ENCOUNTERED, THE FOLLOWING HIRARCHY WILL BE STRICTLY ADHERED TO:
  - a. ROUTE CONDUIT AROUND OBSTRUCTION USING SWEEPING BENDS.
  - b. IF a. CANNOT BE ACCOMPLISHED, CONDUIT ROUTING WILL BE MADE UNDER THE OBSTRUCTION.
  - c. IF a OR b CANNOT BE ACCOMPLISHED, THEN USE OF ONE OF THE OBSTRUCTION DETAILS WILL BE ALLOWED. PRIOR TO COMMENCING DETAIL a OR b, OWNERS APPROVAL MUST BE OBTAINED. DETAIL a IS THE PREFERRED METHOD.
9. ALL CONCRETE SHALL BE FDOT APPROVED CLASS 1.

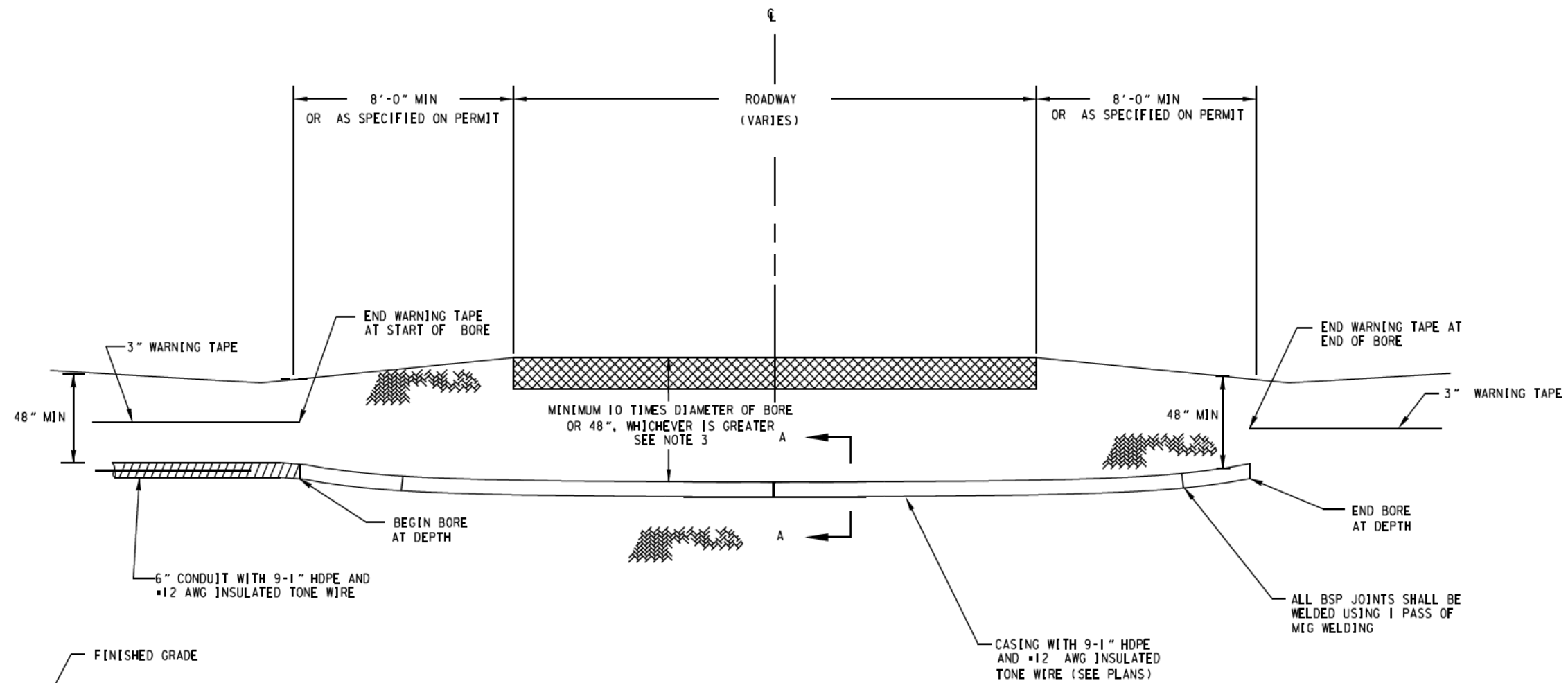


STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (NOT IN CASING)  
N.T.S.



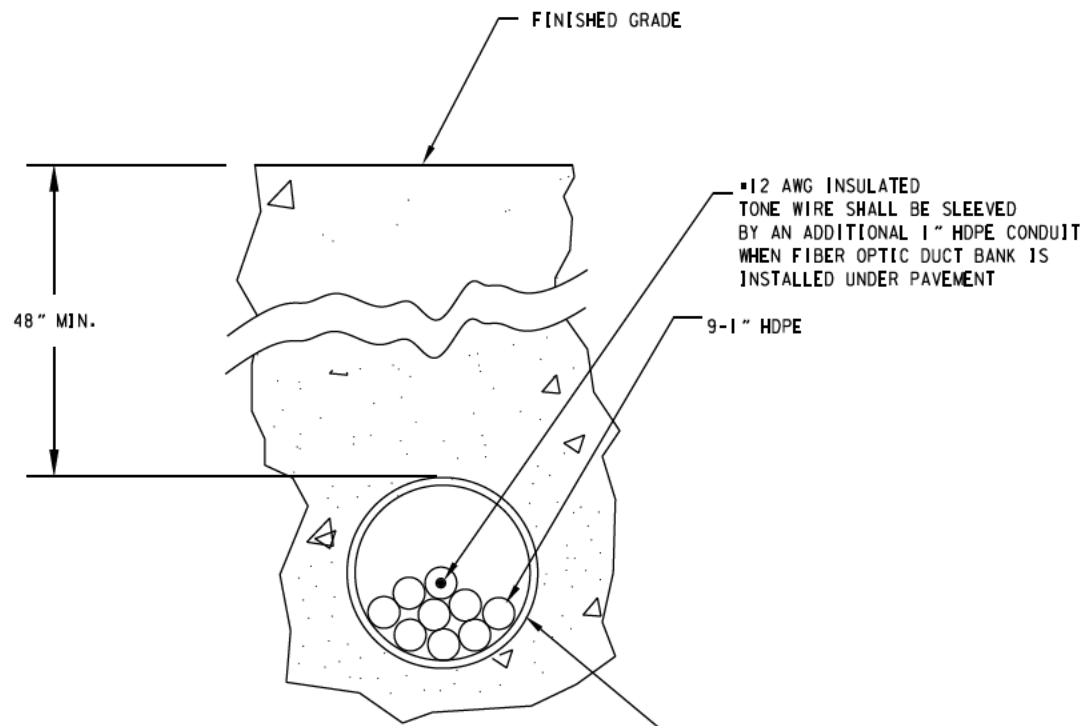
STANDARD CROSS SECTION OF OPEN TRENCH CONDUIT (IN CASING)  
N.T.S.

REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392 ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b> ROAD NO. SR 429 PROJECT NO. 429-202		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>ITS NETWORK TRENCHING DETAILS</b>	SHEET NO. IT-31
DATE	DESCRIPTION	DATE	DESCRIPTION						



TYPICAL DIRECTIONAL BORE

N.T.S.



SECTION A-A  
N.T.S.

6" BSP-STREET CROSSINGS-OFF EXPRESSWAY PROPERTY  
 6" HDPE SDR 13.5-EXPRESSWAY RAMPS AND CROSSING EXCEPT AS WHERE TRENCHED PVC IS LOCATED  
 6" SCH 40 PVC-UNDER EXPRESSWAY RAMP WHERE IT TIES TO TRENCHED PVC.

GENERAL NOTES:

1. UTILITY IN THE PATH OF THE BORE SHALL BE LOCATED AND THE DEPTH OF THE BORE CROSSING SHALL BE DELINEATED TO CROSS UNDER OR OVER UTILITY WITH 12" MINIMUM SEPARATION.
2. ALL ENDS OF BORES SHALL BE SEALED WITH GROUT.
3. VERTICAL DEPTH SHALL BE IN ACCORDANCE WITH FDOT UTILITY ACCOMODATION MANUAL SECTION 9.3 AND 12.3.
4. A SEPARATE BORE FOR 2" CONDUIT WILL BE REQUIRED WHEN ELECTRICAL SERVICE WIRE EXCEEDS AWG #3

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

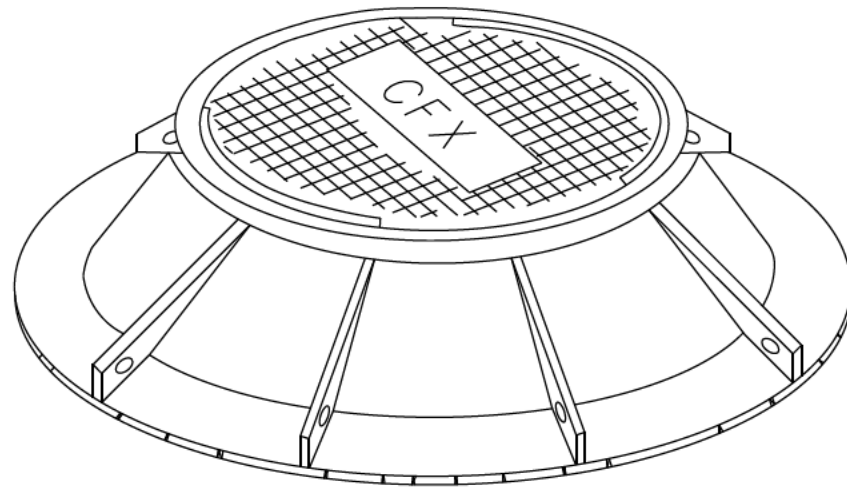
*Traffic Engineering Data Solutions, Inc.*  
 80 Spring Vista Drive Phone: 386.753.0558  
 DelBary, FL 32713 Fax: 386.753.0778  
 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E  
 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
 ROAD NO. SR 429  
 PROJECT NO. 429-202

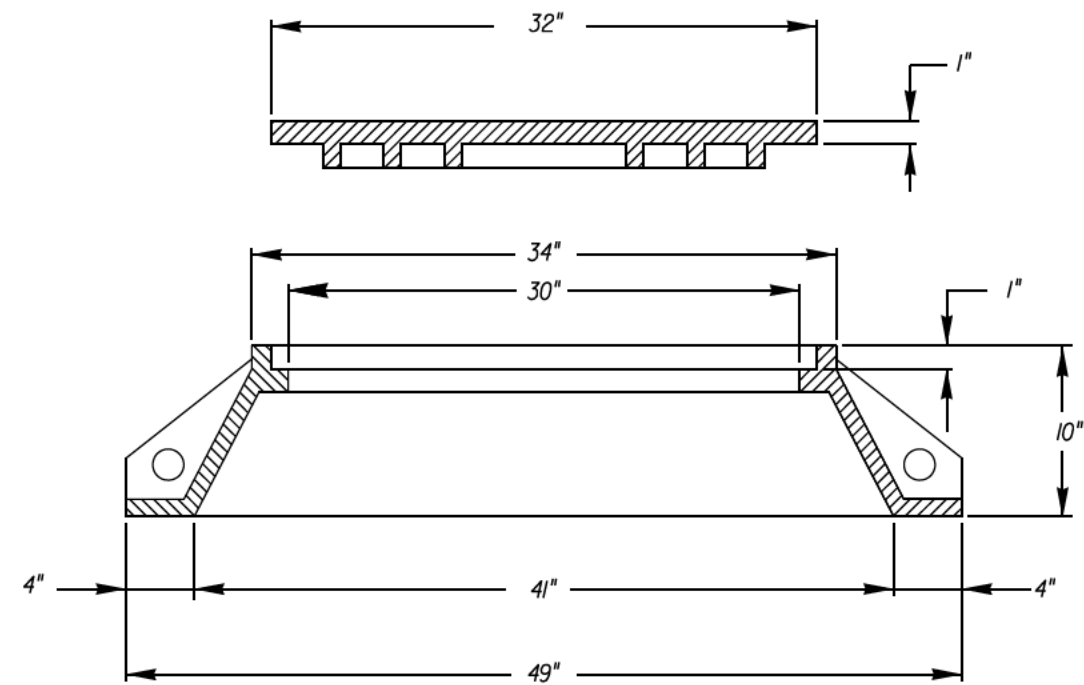
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**ITS NETWORK**  
**DIRECTIONAL BORE DETAIL**

SHEET NO.  
 IT-32



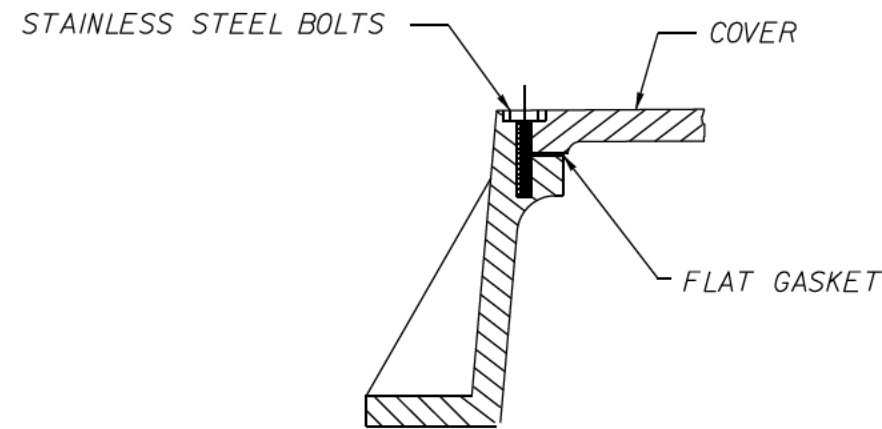
MANHOLE COVER  
N.T.S.



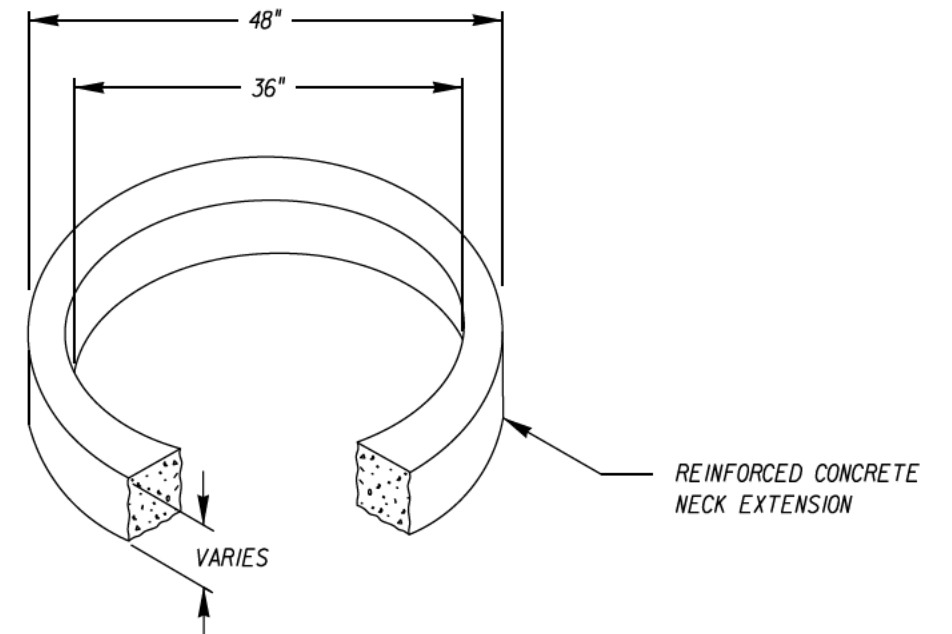
RING AND COVER DETAIL  
N.T.S.

GENERAL NOTES:

1. EACH COVER TO HAVE (4) PICK SLOTS FOR REMOVING.
2. "CFX" IN COVER.
3. ACCESS HOLE: 30".
4. PENTABOLTS
5. MANHOLE RING AND COVER SHALL CONFORM TO HS20 TRAFFIC RATED-HEAVY DUTY LOAD RATING.
6. ANCHOR RING TO MANHOLE TOP USING 1/2" GALVANIZED BOLTS.
7. MANHOLE RING AND COVER TO BE WATERTIGHT AND GROUNDED TO COMMON GROUND.
8. MATERIAL: ASTM-A48 CLASS 35B GRAY IRON.

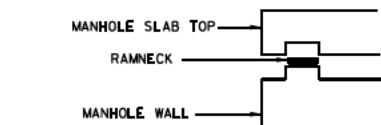
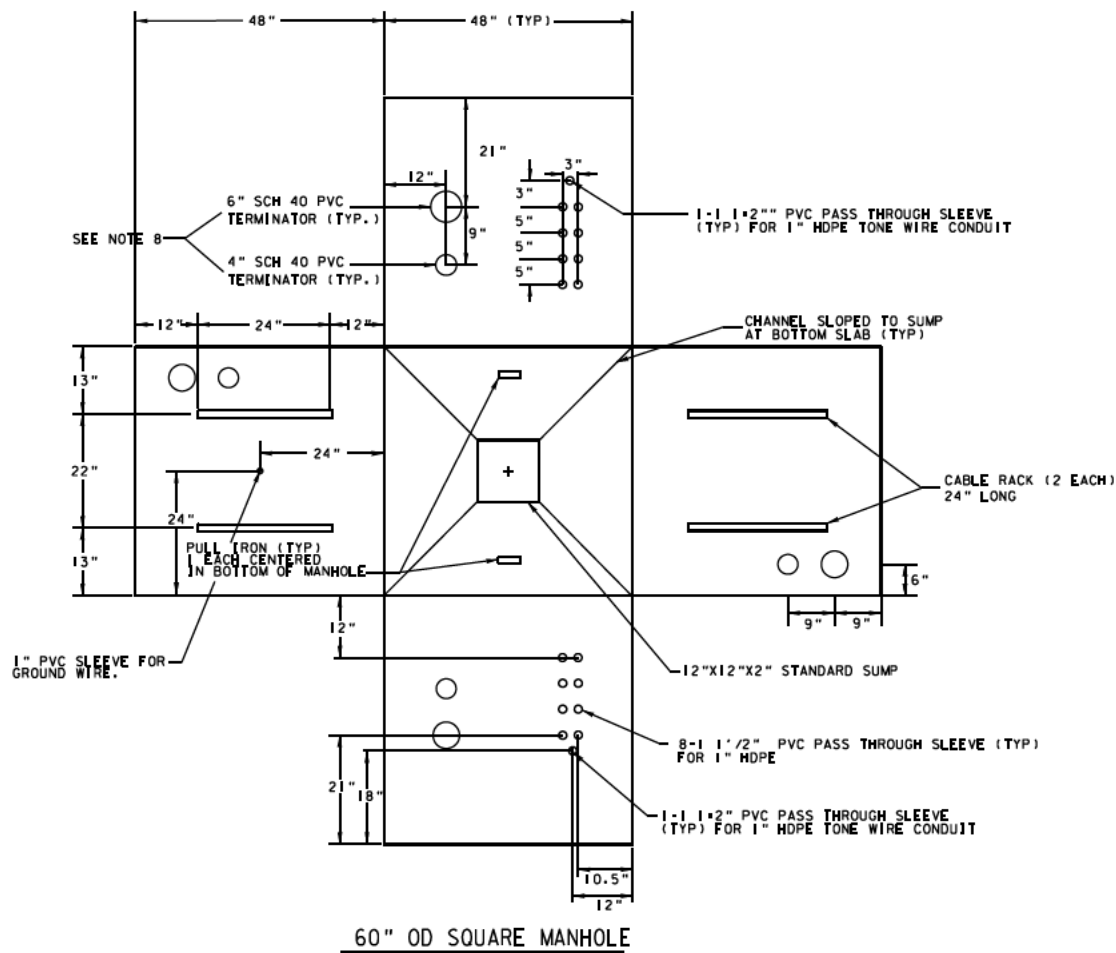


BOLTED WATERTIGHT DETAIL  
N.T.S.



TYPICAL NECK EXTENSION DETAIL  
N.T.S.

REVISIONS				Traffic Engineering Data Solutions, Inc.		CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ITS MANHOLE DETAILS	SHEET NO. IT-33
DATE	DESCRIPTION	DATE	DESCRIPTION	80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778		ROAD NO.	PROJECT NO.			
				CERTIFICATION OF AUTHORIZATION # 27392		SR 429	429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902						



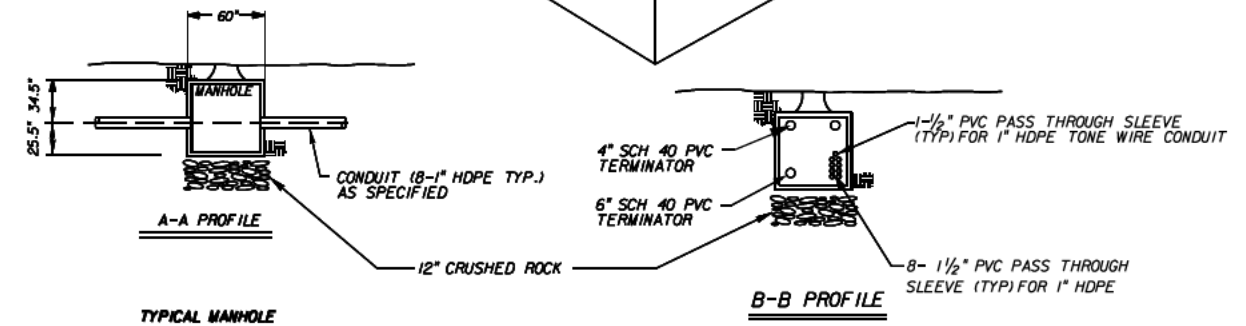
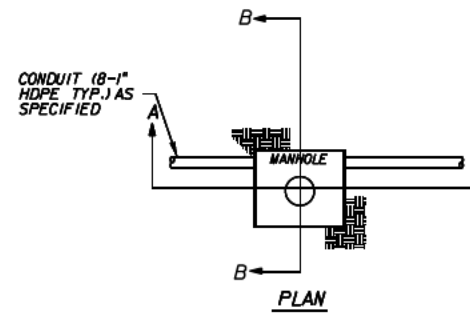
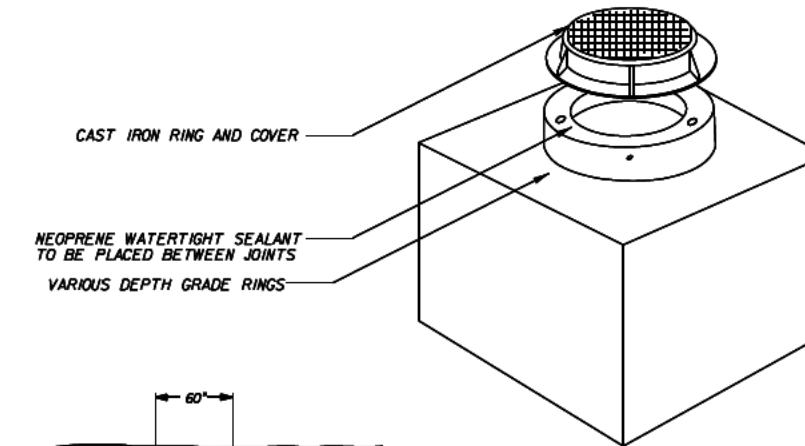
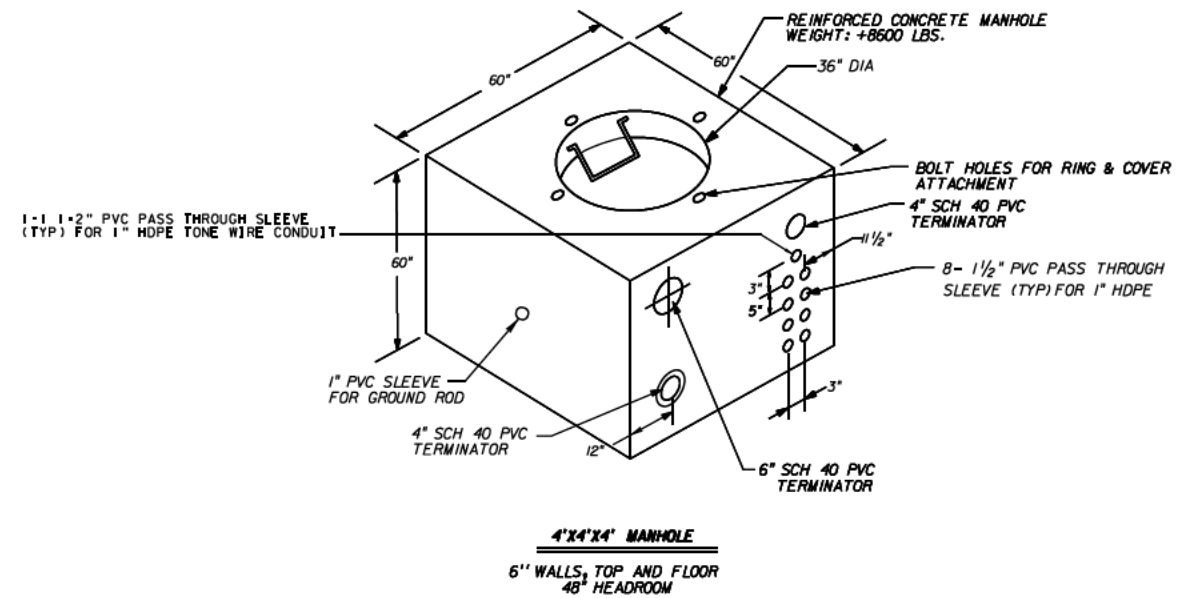
MANHOLE JOINT CONFIGURATION  
N.T.S.

**RING & COVER GENERAL NOTES:**

1. EACH COVER TO HAVE (4) PICK SLOTS FOR REMOVING.
2. "CFX" IN COVER.
3. ACCESS HOLE: 30".
4. PENTABOLTS
5. MANHOLE RING AND COVER SHALL CONFORM TO HS20 TRAFFIC RATED-HEAVY DUTY LOAD RATING.
6. ANCHOR RING TO MANHOLE TOP USING 1/2" GALVANIZED BOLTS.
7. MANHOLE RING AND COVER TO BE WATERTIGHT AND GROUNDED TO COMMON GROUND.
8. MATERIAL: ASTM-A48 CLASS 35B GRAY IRON.

**GENERAL NOTES:**

1. CONTRACTOR SHALL SUBMIT PRECAST CONCRETE MANHOLE AND RING W/IER CUT SHEETS AND CAPACITIES VERIFICATIONS FOR ENGINEER'S REVIEW AND APPROVAL.
2. MANHOLE SHALL CONFORM TO HL93 FULL VEHICULAR LOADING.
3. ALL MANHOLES SHALL BE PROVIDED WITH AN INWESCO SERIES 1-3600 OR EQUIVALENT LADDER THAT EXTENDS TO THE FLOOR.
4. ALL UNUSED ACCESS POINT SHALL BE EQUIPPED WITH COMPRESSION TYPE SNUG PLUGS.
5. ALL MANHOLES SHALL BE PLACED WITH COVER FLUSH WITH FINISHED GRADE ON PAVED SHOULDER. MANHOLE COVERS SHALL BE BOLTED IN PLACE.
6. GROUND RODS SHALL BE INSTALLED OUTSIDE OF MANHOLE AND #6 BARE WIRE SHALL BE BROUGHT INTO MANHOLE THROUGH THE 1" PVC SLEEVE ON SIDE OF MANHOLE.
7. ALL MANHOLES SHALL HAVE 12" OF 1/2" CRUSHED ROCK PLACED UNDER MANHOLES.
8. ALL MANHOLE PENETRATIONS SHALL BE SEALED TO PREVENT WATER INGRESS TO THE SATISFACTION OF THE ENGINEER.
9. MANHOLE WALL THICKNESS SHALL BE A MINIMUM OF 6".
10. RAMNECK SHALL BE USED TO SEAL ALL MANHOLE JOINTS.
11. CABLE RACKS SHALL BE INSTALLED USING 1/2" x 2 1/2" GALVANIZED MACHINE BOLTS AND GALVANIZED ANCHORS CAST INTO THE WALLS.



1. ALL MANHOLES SHALL HAVE 12" OF 3/4" CRUSHED ROCK PLACED UNDER MANHOLES.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

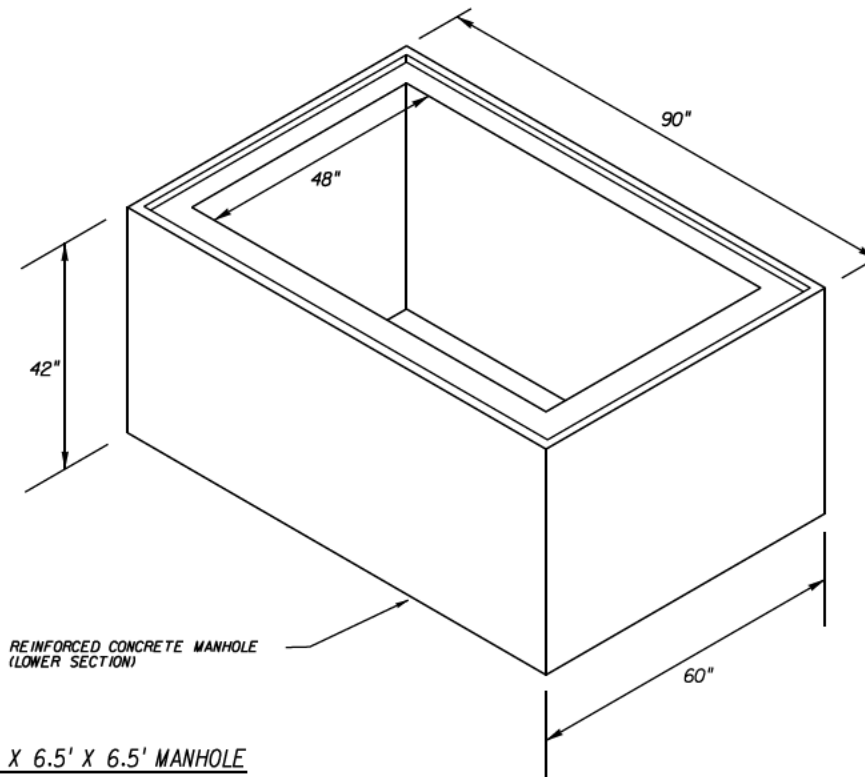
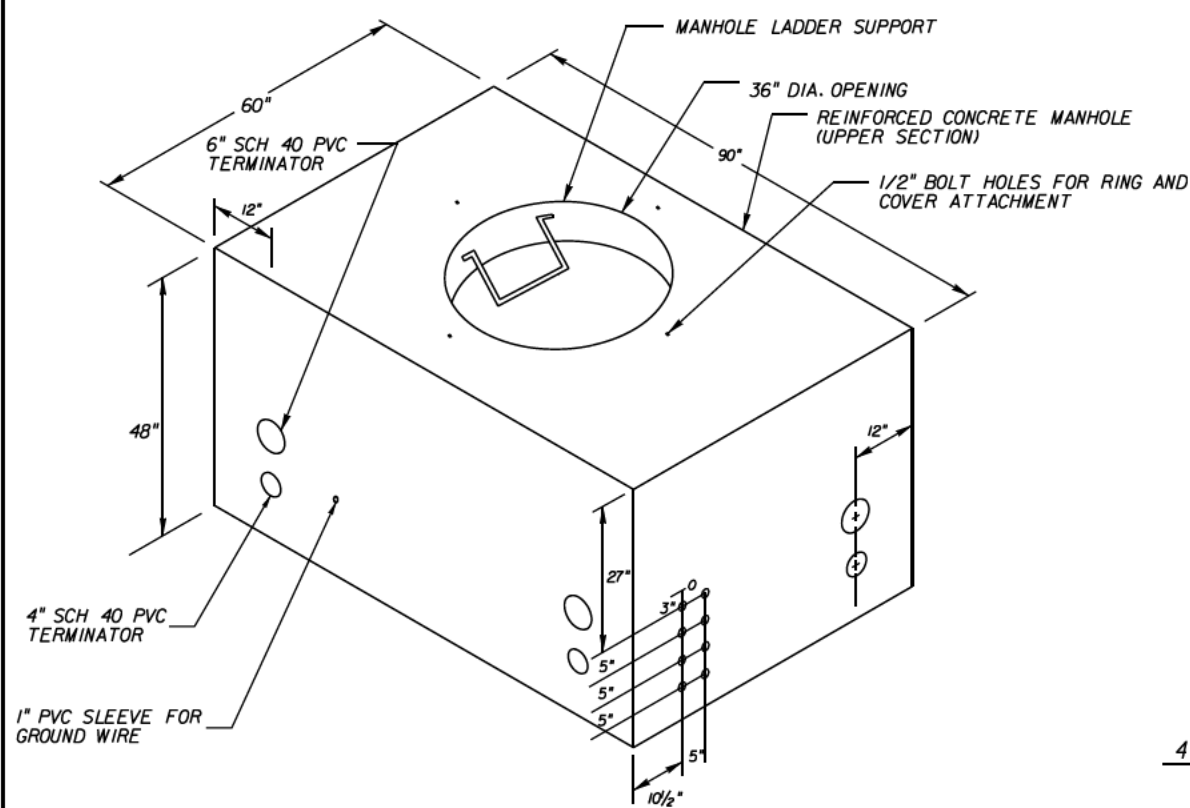
Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive Phone: 386.753.0558  
DeBary, FL 32713 Fax: 386.753.0778  
CERTIFICATION OF AUTHORIZATION # 27392  
ENGINEER OF RECORD: FRED D. FERRELL, P.E  
FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
ROAD NO. SR 429 PROJECT NO. 429-202

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

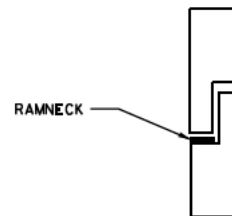
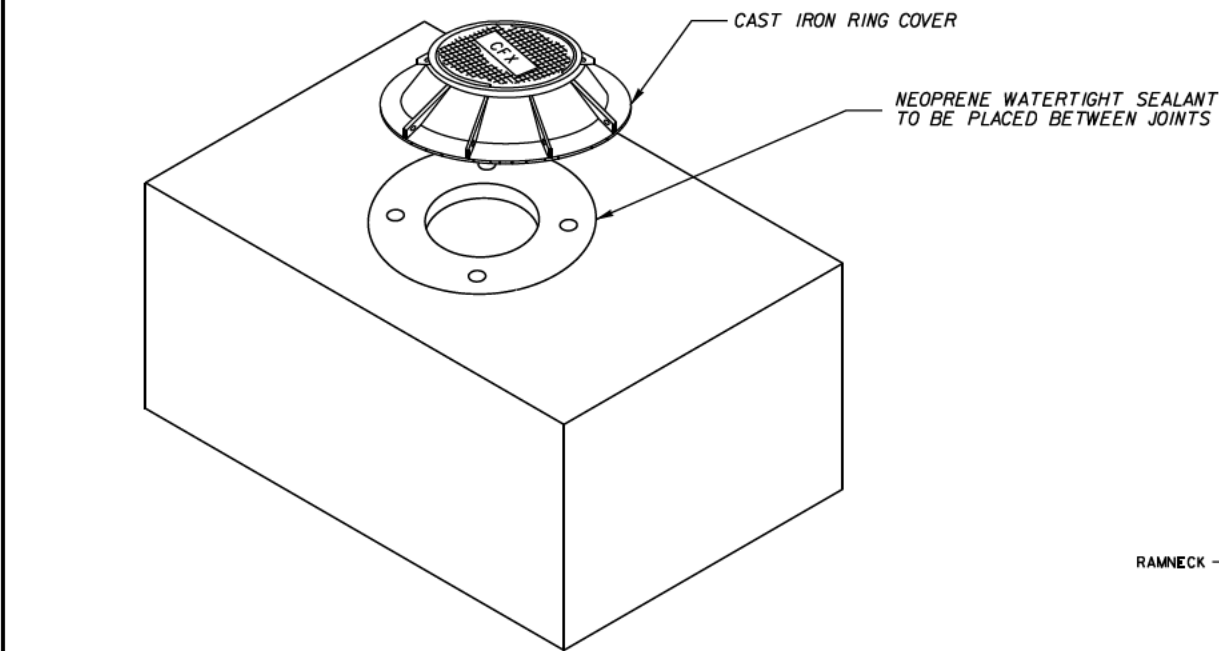
**ITS MANHOLE DETAILS**

SHEET NO. IT-34

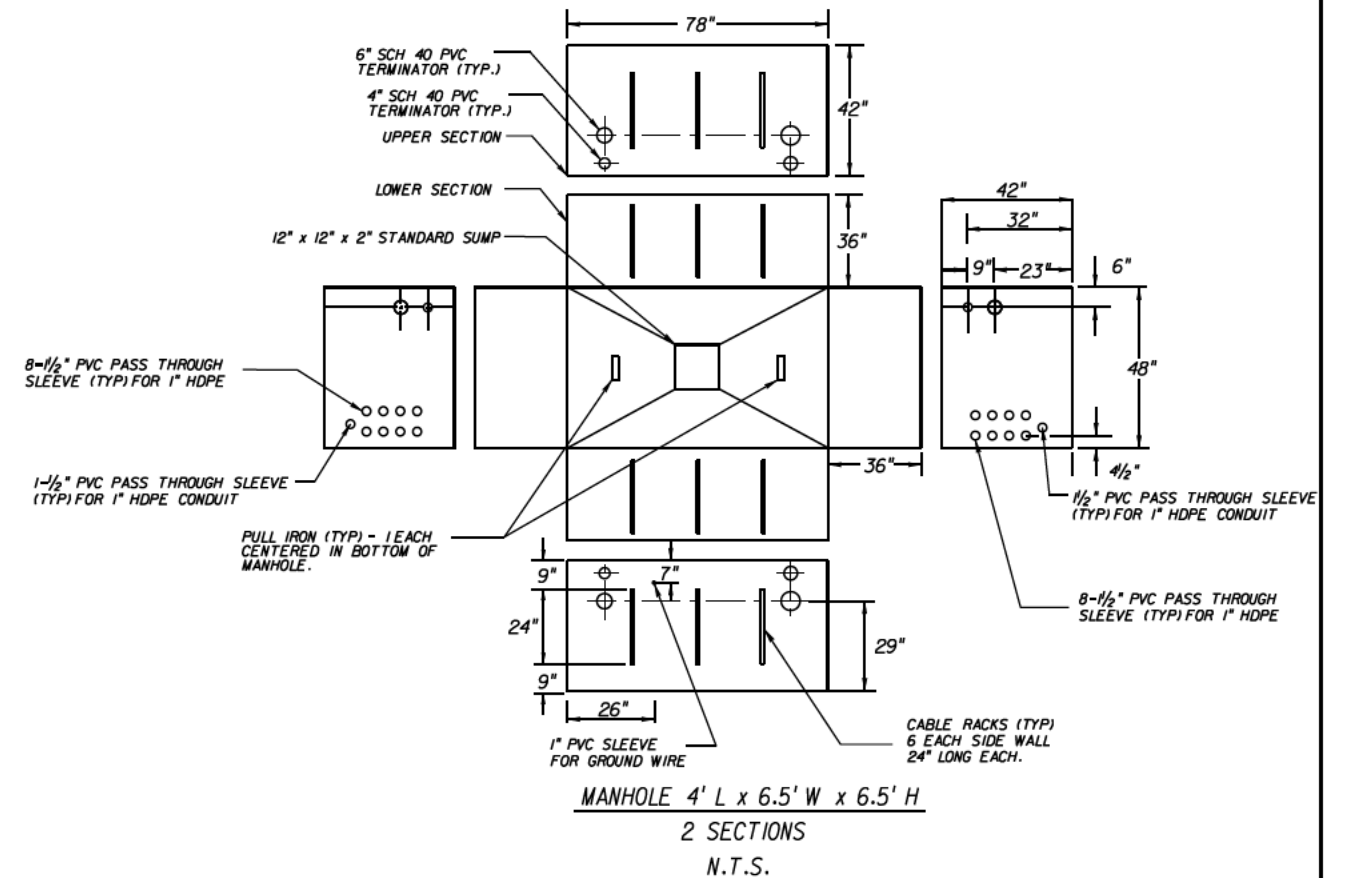


4' X 6.5' X 6.5' MANHOLE  
N.T.S.  
78" HEADROOM  
6" WALLS

- GENERAL NOTES:**
1. CONTRACTOR SHALL SUBMIT PRECAST CONCRETE MANHOLE AND RING WIER CUT SHEETS AND CAPACITIES VERIFICATIONS FOR ENGINEER'S REVIEW AND APPROVAL
  2. MANHOLE SHALL CONFORM TO HL93 FULL VEHICULAR LOADING.
  3. ALL MANHOLES SHALL BE PROVIDED WITH AN INWESCO SERIES 1-3600 OR EQUIVALENT LADDER THAT EXTENDS TO THE FLOOR.
  4. ALL UNUSED ACCESS POINT SHALL BE EQUIPPED WITH COMPRESSION TYPE SNUG PLUGS.
  5. ALL MANHOLES SHALL BE PLACED WITH COVER FLUSH WITH FINISHED GRADE ON PAVED SHOULDER. MANHOLE COVERS SHALL BE BOLTED IN PLACE.
  6. GROUND RODS SHALL BE INSTALLED OUTSIDE OF MANHOLE AND #6 BARE WIRE SHALL BE BROUGHT INTO MANHOLE THROUGH THE 1" PVC SLEEVE ON SIDE OF MANHOLE.
  7. ALL MANHOLES SHALL HAVE 12" OF 1/2" CRUSHED ROCK PLACED UNDER MANHOLES.
  8. ALL MANHOLE PENETRATIONS SHALL BE SEALED TO PREVENT WATER INGRESS TO THE SATISFACTION OF THE ENGINEER.
  9. MANHOLE WALL THICKNESS SHALL BE A MINIMUM OF 6".
  10. RAMNECK SHALL BE USED TO SEAL ALL MANHOLE JOINTS.
  11. CABLE RACKS SHALL BE INSTALLED USING 1/2" x 2" GALVANIZED MACHINE BOLTS AND GALVANIZED ANCHORS CAST INTO THE WALLS.



MANHOLE JOINT CONFIGURATION



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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ENGINEER OF RECORD: FRED D. FERRELL, P.E  
FL REGISTRATION NO. 41902

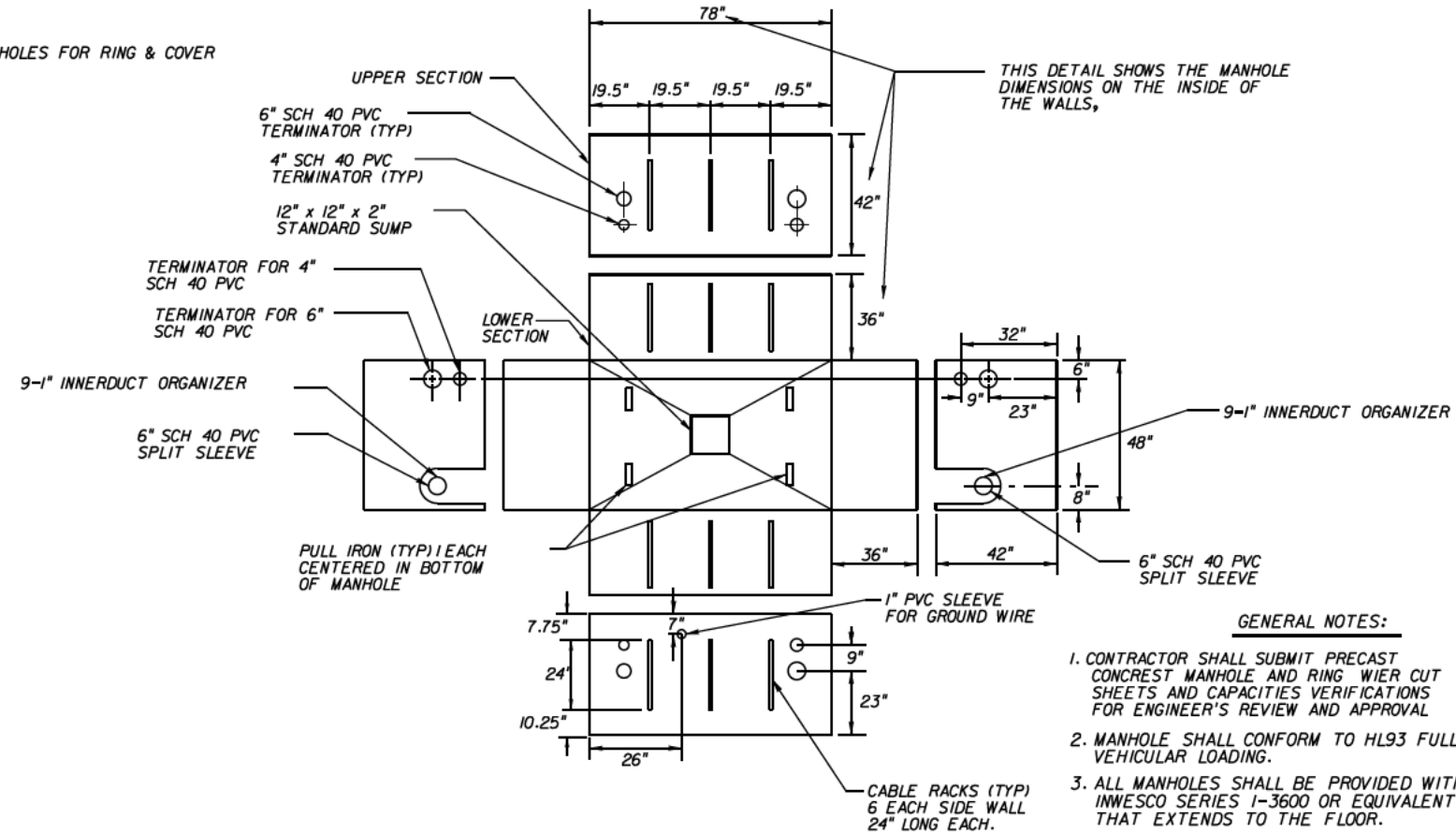
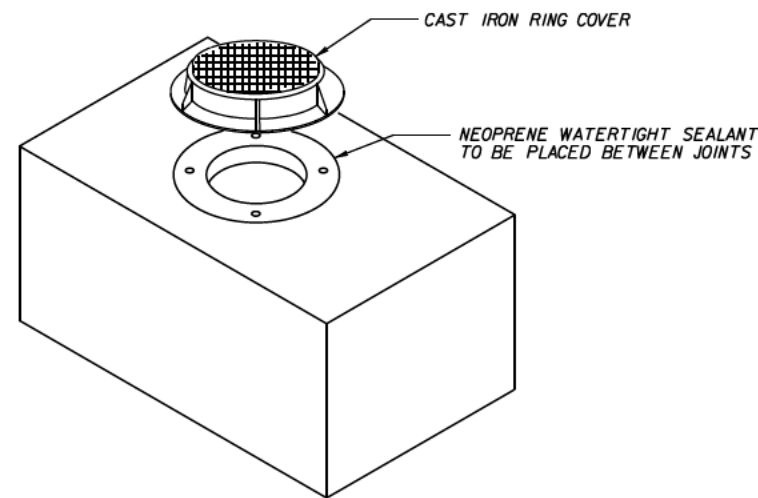
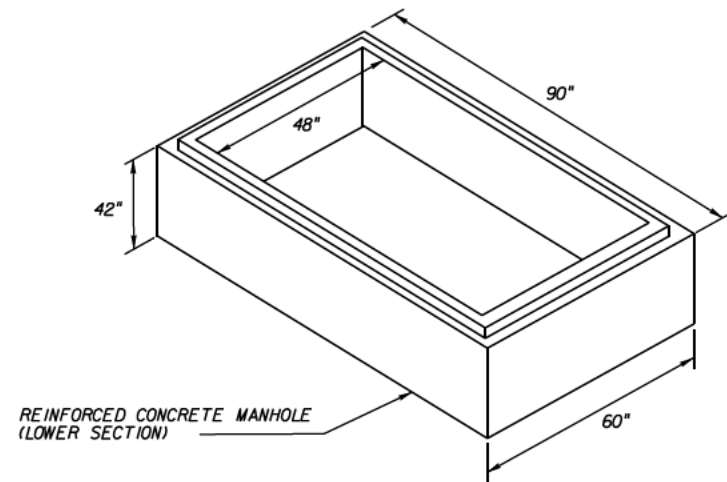
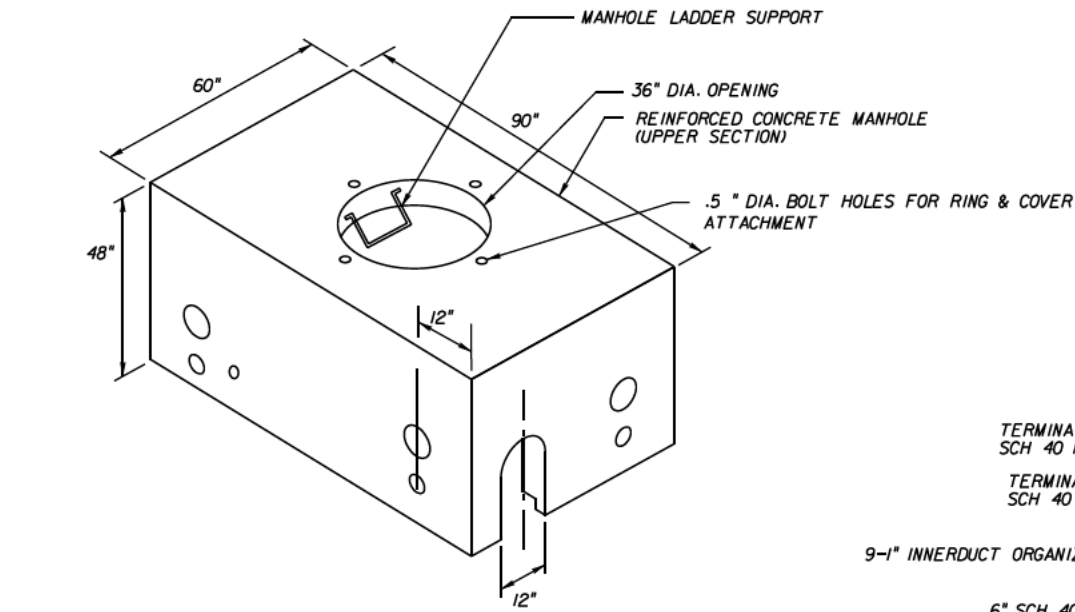
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
ROAD NO. SR 429 PROJECT NO. 429-202

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**ITS MANHOLE DETAILS**

SHEET NO. IT-35

# 4'W X 6.5'L X 6.5'H MANHOLE DETAIL



## GENERAL NOTES:

- CONTRACTOR SHALL SUBMIT PRECAST CONCRETE MANHOLE AND RING WIER CUT SHEETS AND CAPACITIES VERIFICATIONS FOR ENGINEER'S REVIEW AND APPROVAL
- MANHOLE SHALL CONFORM TO HL93 FULL VEHICULAR LOADING.
- ALL MANHOLES SHALL BE PROVIDED WITH A INWESCO SERIES 1-3600 OR EQUIVALENT LADDER THAT EXTENDS TO THE FLOOR.
- ALL UNUSED ACCESS POINT SHALL BE EQUIPPED WITH COMPRESSION TYPE SNUG PLUGS.
- ALL MANHOLES SHALL BE PLACED WITH COVER FLUSH WITH FINISHED GRADE ON PAVED SHOULDER. MANHOLE COVERS SHALL BE BOLTED IN PLACE.
- GROUND RODS SHALL BE INSTALLED OUTSIDE OF MANHOLE AND #6 BARE WIRE SHALL BE BROUGHT INTO MANHOLE THROUGH THE 1" PVC SLEEVE ON SIDE OF MANHOLE.
- ALL MANHOLES SHALL HAVE 12" OF 1/2" CRUSHED ROCK PLACED UNDER MANHOLES.
- ALL MANHOLE PENETRATIONS SHALL BE SEALED TO PREVENT WATER INGRESS TO THE SATISFACTION OF THE ENGINEER.
- MANHOLE WALL THICKNESS SHALL BE A MINIMUM OF 6".
- RAMNECK SHALL BE USED TO SEAL ALL MANHOLE JOINTS.
- CABLE RACKS SHALL BE INSTALLED USING 1/2" x 2" GALVANIZED MACHINE BOLTS AND GALVANIZED ANCHORS CAST INTO THE WALLS.
- THE CONTRACTOR SHALL INSTALL THE TONEWIRE IN 6" SCH 40 PVC SPLIT SLEEVE AND COIL 20' OF SLACK IN THE MANHOLE. THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE OCCURS TO THE TONEWIRE DURING THE INSTALLATION PROCESS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive Phone: 386.753.0558  
DeBary, FL 32713 Fax: 386.753.0778  
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ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
ROAD NO. SR 429  
PROJECT NO. 429-202

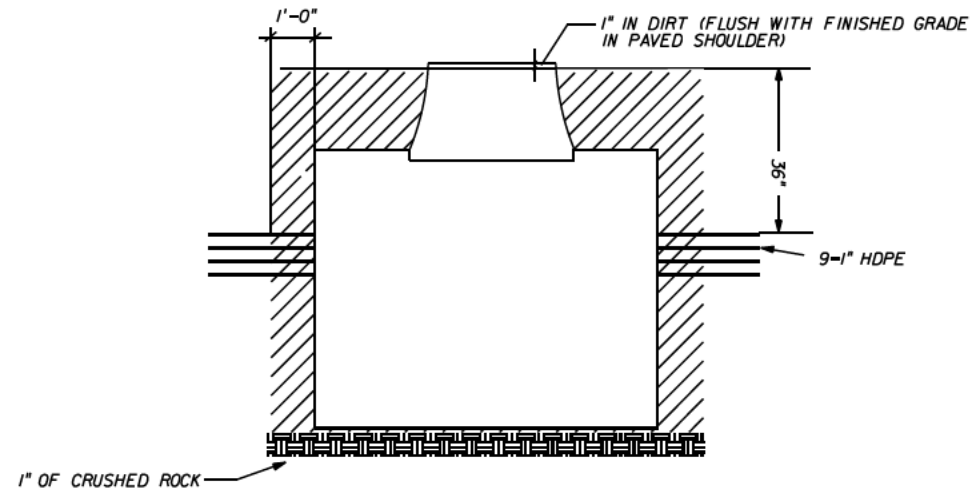
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**ITS MANHOLE DETAILS**

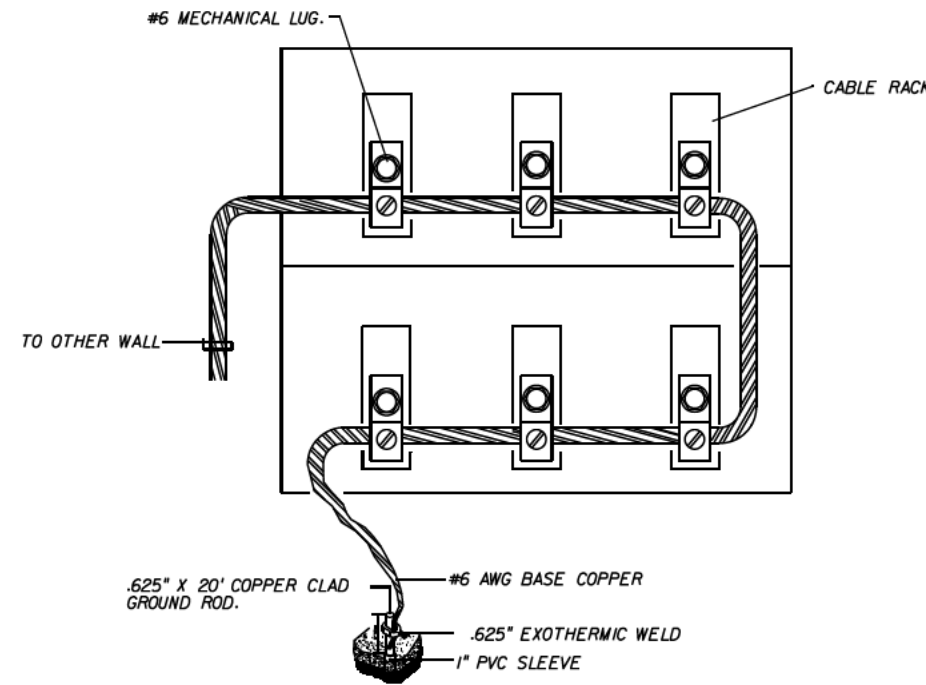
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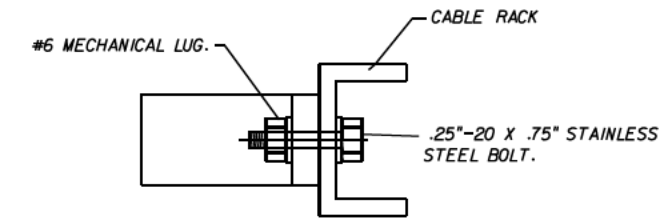
BONDING & GROUNDING DETAIL



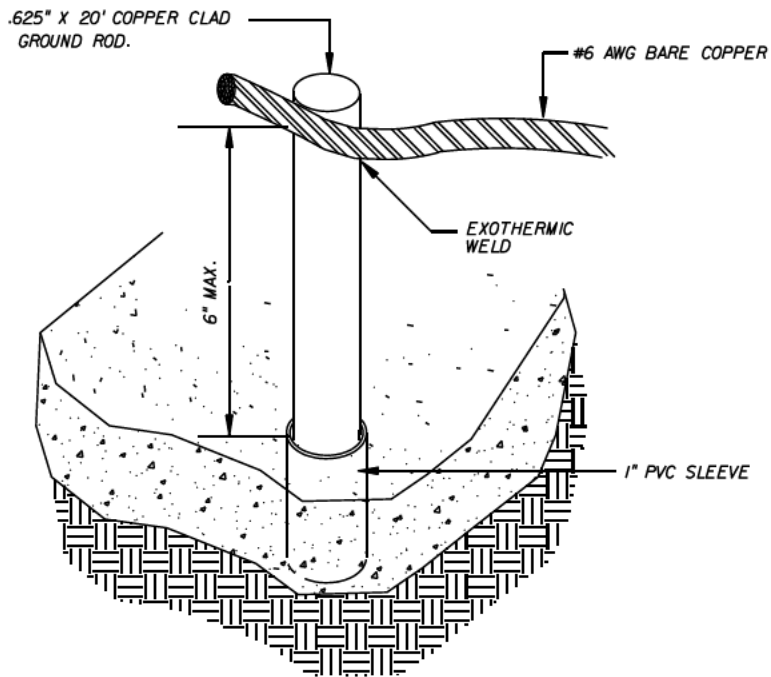
MANHOLE PROFILE  
N.T.S.



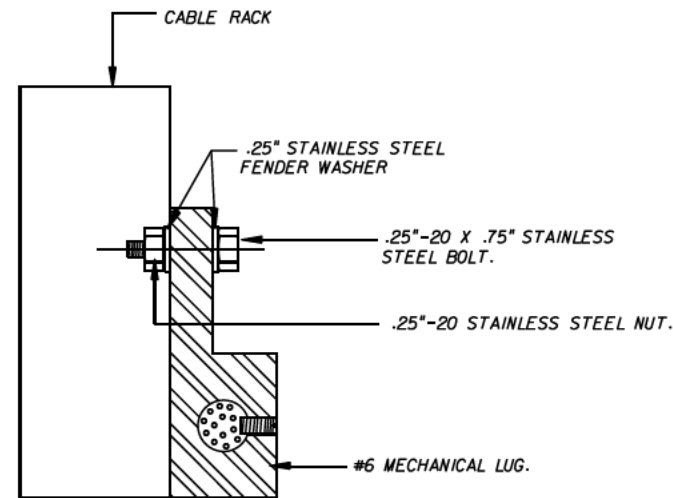
MANHOLE GROUNDING  
TYPICAL WALL  
N.T.S.



MECHANICAL LUG  
PLAN VIEW  
N.T.S.



GROUND ROD CLAMP  
N.T.S.



MECHANICAL LUG  
PROFILE VIEW  
N.T.S.

ROADWAY AND TRAFFIC  
DESIGN CALL FOR THE  
FOLLOWING GENERAL NOTES:

1. GROUND RODS SHALL HAVE A RESISTANCE TO GROUND NOT TO EXCEED 25 OHM. WHERE THE RESISTANCE IS NOT AS LOW AS 25 OHMS, TWO OR MORE GROUND RODS CONNECTED IN PARALLEL SHALL BE USED. CONTRACTOR SHALL HAVE NECESSARY TEST EQUIPMENT (CURRENT CALIBRATION CERTIFICATE REQUIRED) AT FINAL INSPECTION TO INSURE ACCEPTABILITY OF GROUNDING SYSTEM. TOTAL GROUNDING SYSTEM NOT TO EXCEED 10 OHMS.
2. ALL CONNECTIONS BETWEEN BARE COPPER GROUNDING WIRE AND GROUND ROD SHALL BE EXOTHERMIC WELD PER MANUFACTURER STANDARDS.
3. 20' COPPER CLAD GROUND ROD SHALL BE ACHIEVED BY BONDING 2-10' RODS BY EXOTHERMIC WELDING.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
FL REGISTRATION NO. 41902

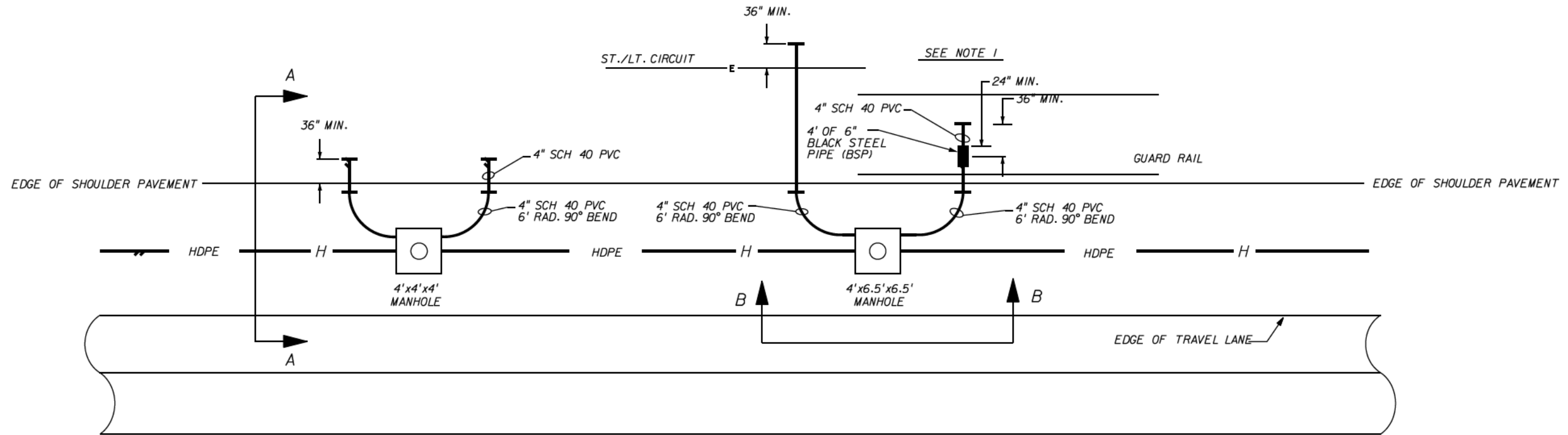
CENTRAL FLORIDA EXPRESSWAY AUTHORITY  
ROAD NO. SR 429  
PROJECT NO. 429-202

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

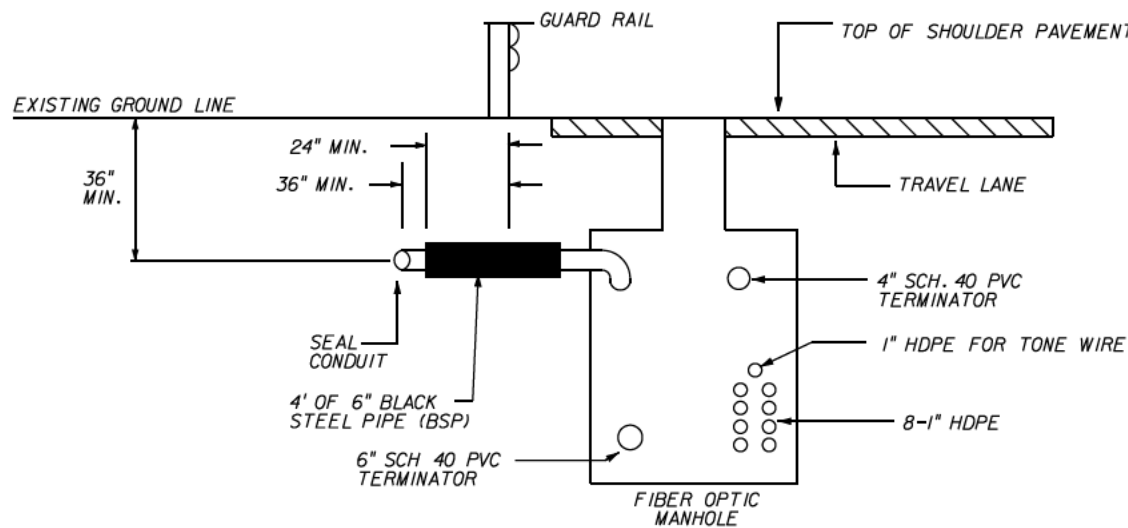
ITS MANHOLE DETAILS

SHEET NO. IT-37

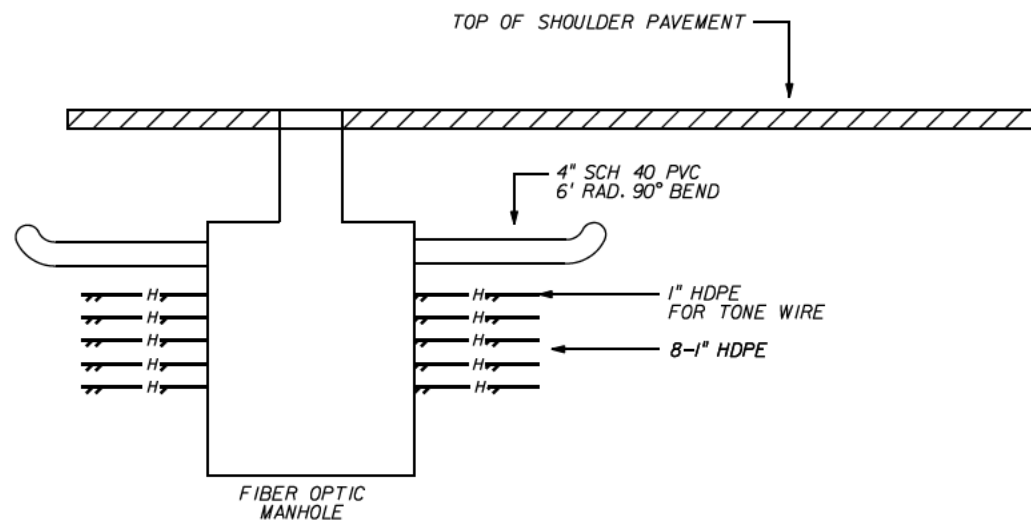
LATERAL CONDUIT FROM MANHOLE DETAIL



PLAN VIEW  
N.T.S.



SECTION A-A  
N.T.S.



SECTION B-B  
N.T.S.

GENERAL NOTE

1. THE 4" LATERAL CONDUIT SHALL EXTEND A MINIMUM OF 36" BEHIND ANY ABOVE OR BELOW GROUND OBSTRUCTION.
2. 4" LATERAL CONDUIT SHALL BE EQUIPPED WITH 2-1" HDPE.
3. LATERAL CONDUITS SHALL BE SEALED IN MANHOLE AND AT END OF CONDUIT.
4. ALL MANHOLES INSTALLED UNDER THE PAVED SHOULDER REQUIRE 4" LATERAL CONDUIT AS SHOWN IN DETAILS ABOVE.
5. PAYMENT FOR THE 4" SCH. 40 PVC 90° SWEEP LATERAL CONDUIT & 6" BLACK STEEL PIPE SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE MANHOLE AND SHALL BE INCLUDED IN THE COST OF THE MANHOLES.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

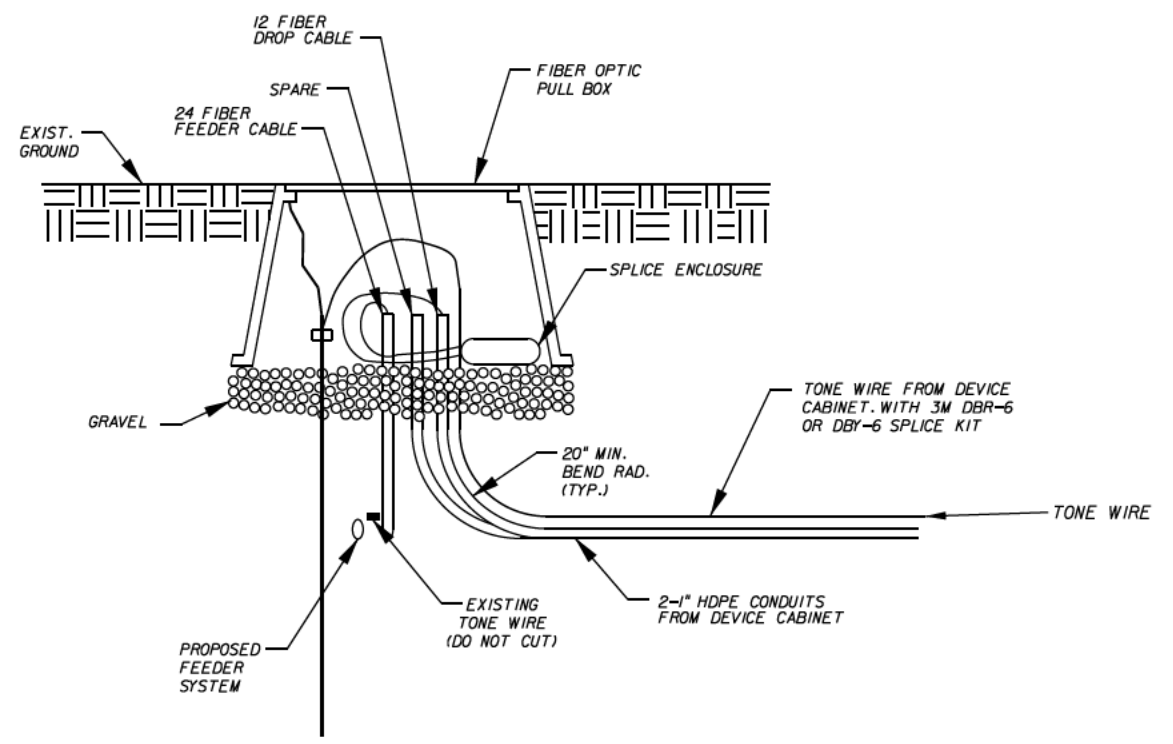
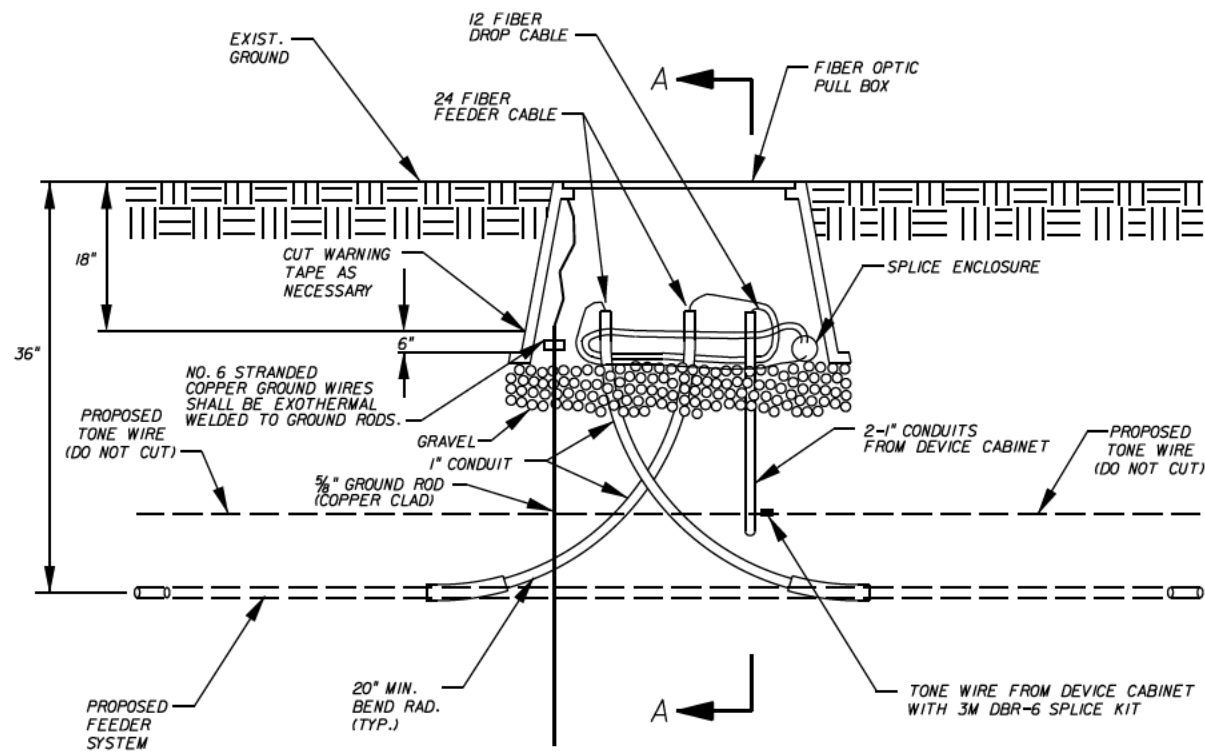
Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive Phone: 386.753.0558  
DeBary, FL 32713 Fax: 386.753.0778  
CERTIFICATION OF AUTHORIZATION # 27392  
ENGINEER OF RECORD: FRED D. FERRELL, P.E  
FL REGISTRATION NO. 41902

CENTRAL FLORIDA EXPRESSWAY AUTHORITY  
ROAD NO. SR 429 PROJECT NO. 429-202

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ITS MANHOLE DETAILS

SHEET NO. IT-38

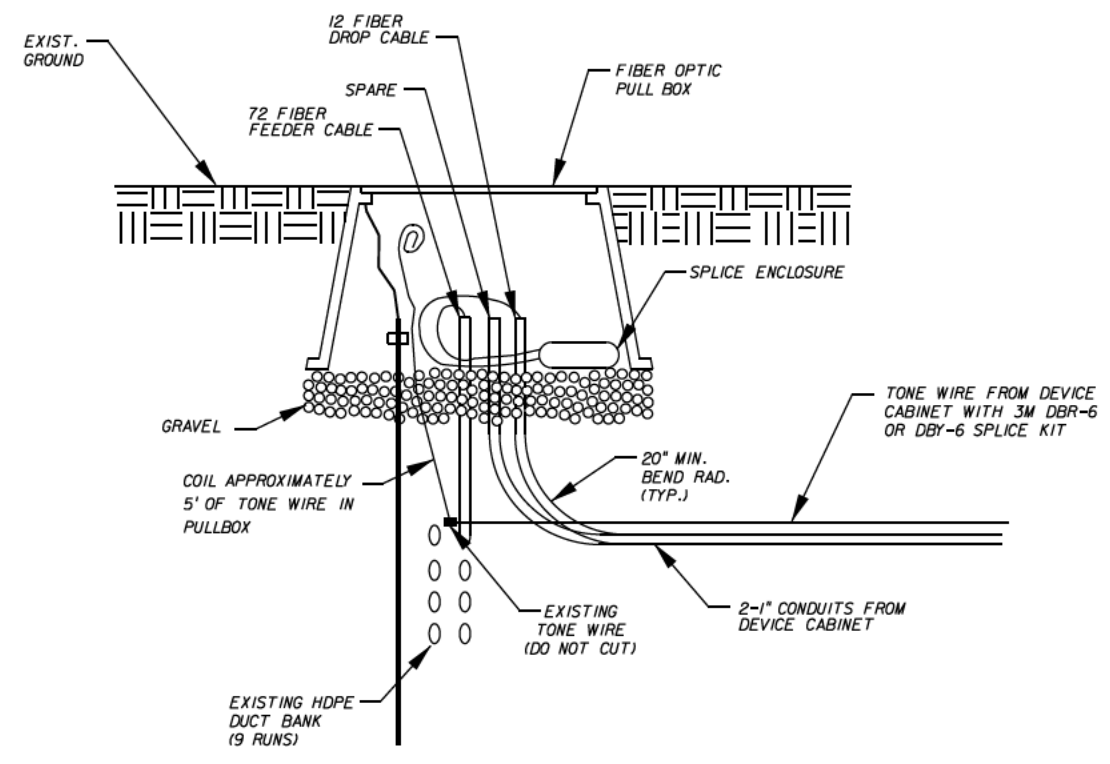
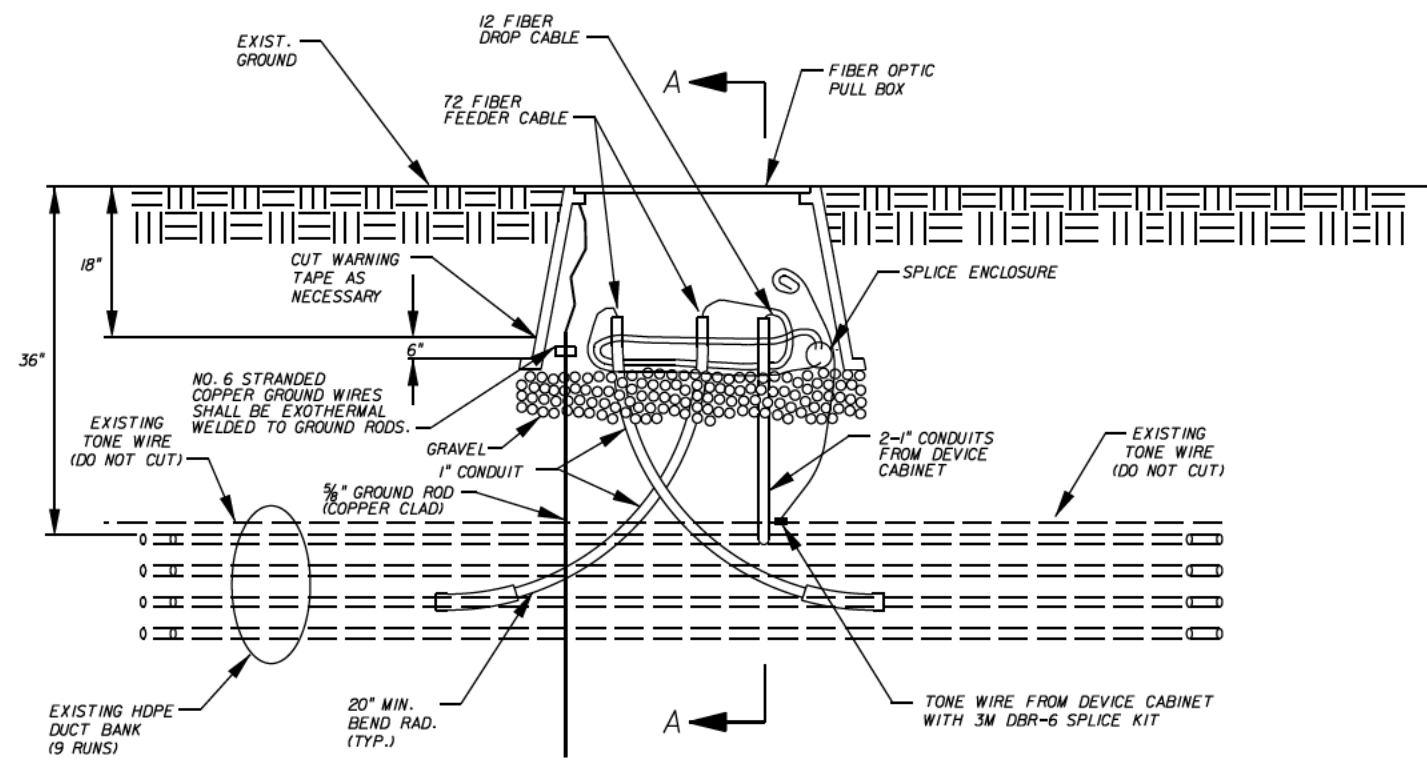


SECTION A-A

- NOTES:
1. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONDUIT OR F.O.N. CABLE AND TONE WIRE. ANY DAMAGE SHALL BE REPLACED IN KIND AT THE CONTRACTORS EXPENSE.
  2. EXTEND THE BLUE CONDUIT INTO THE PULL BOX FOR THE FEEDER CABLE.
  3. INSTALLATION OF PULL BOX, ASSOCIATED EQUIPMENT AND MATERIALS SHALL BE PAID UNDER PAY ITEM 635-1-15.
  4. EXTEND AND COIL TONEWIRE INTO PULLBOX. DO NOT SPLICE INTO EXISTING TONE WIRE.

F.O.N. CONDUIT DETAIL UNDERGROUND  
N.T.S.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

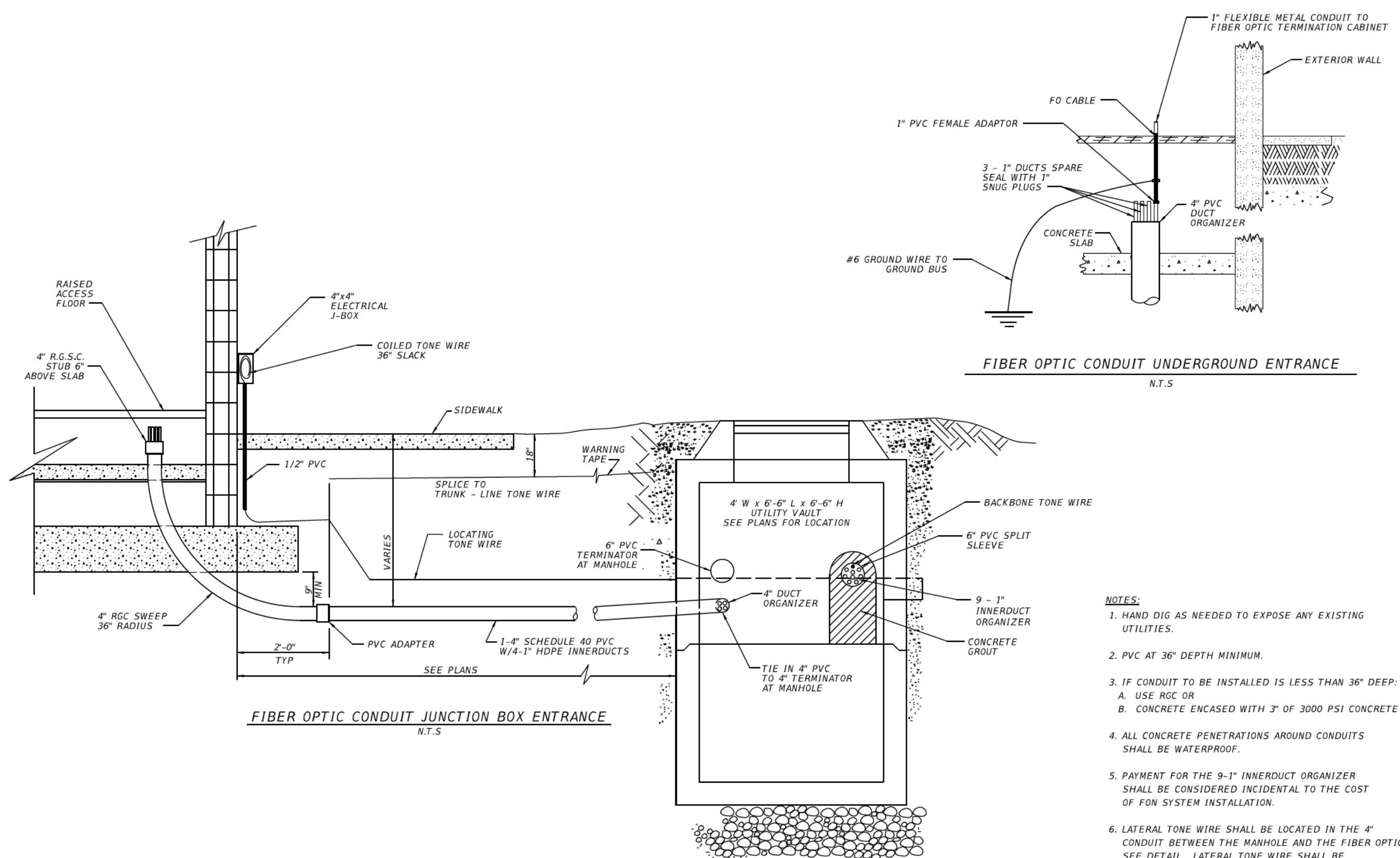


SECTION A-A

- NOTES:
1. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONDUIT OR F.O.N. CABLE AND TONE WIRE. ANY DAMAGE SHALL BE REPLACED IN KIND AT THE CONTRACTORS EXPENSE.
  2. EXTEND THE BLUE CONDUIT INTO THE PULL BOX FOR THE FEEDER CABLE.
  3. INSTALLATION OF PULL BOX, ASSOCIATED EQUIPMENT AND MATERIALS SHALL BE PAID UNDER PAY ITEM 635-I-15.

F.O.N. CONDUIT BREAK-IN DETAIL UNDERGROUND  
N.T.S.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					



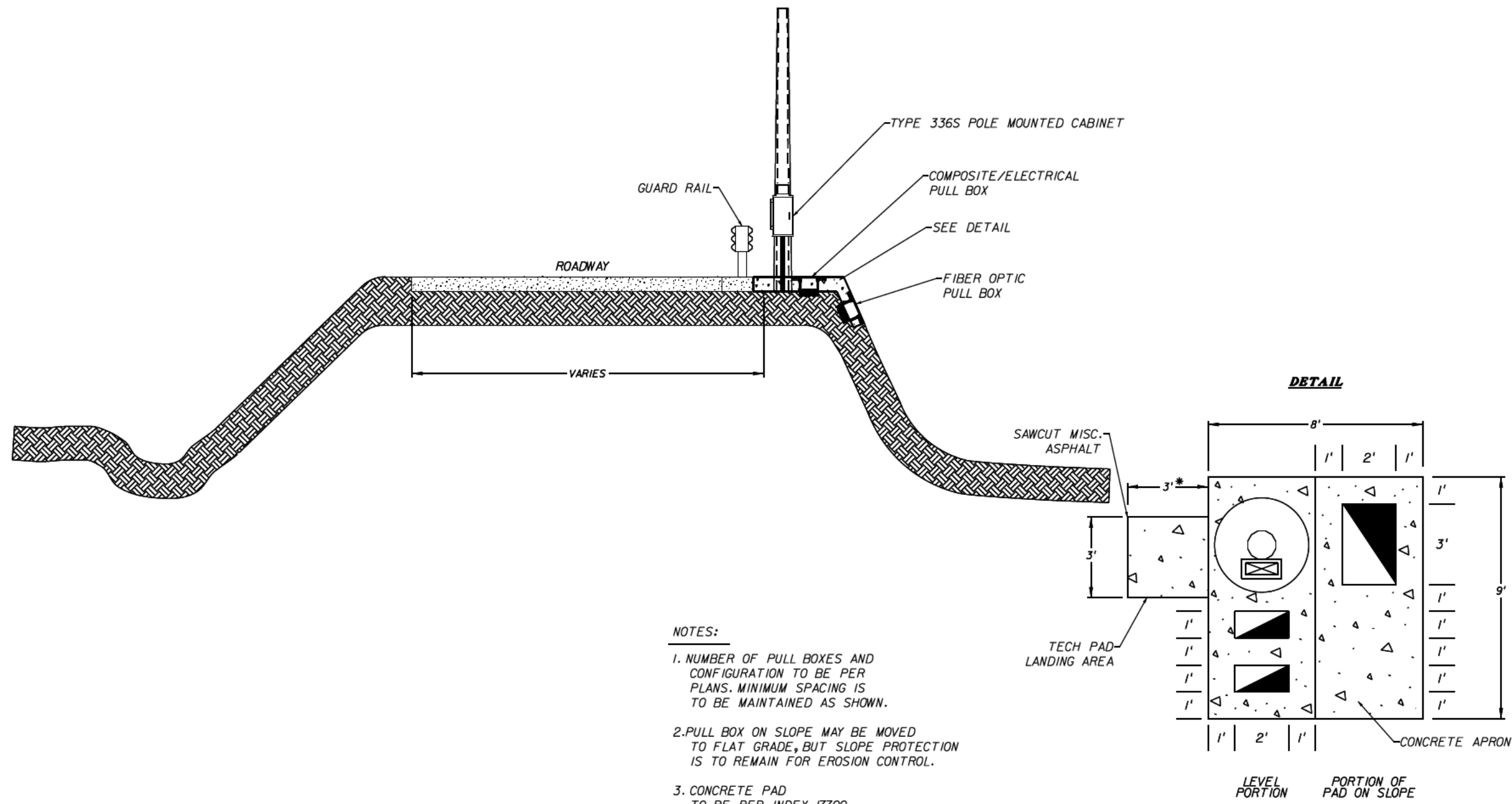
FIBER OPTIC CONDUIT UNDERGROUND ENTRANCE  
N.T.S

FIBER OPTIC CONDUIT JUNCTION BOX ENTRANCE  
N.T.S

- NOTES:**
- HAND DIG AS NEEDED TO EXPOSE ANY EXISTING UTILITIES.
  - PVC AT 36" DEPTH MINIMUM.
  - IF CONDUIT TO BE INSTALLED IS LESS THAN 36" DEEP:
    - USE RGC OR
    - CONCRETE ENCASED WITH 3" OF 3000 PSI CONCRETE
  - ALL CONCRETE PENETRATIONS AROUND CONDUITS SHALL BE WATERPROOF.
  - PAYMENT FOR THE 9-1" INNERDUCT ORGANIZER SHALL BE CONSIDERED INCIDENTAL TO THE COST OF FON SYSTEM INSTALLATION.
  - LATERAL TONE WIRE SHALL BE LOCATED IN THE 4" CONDUIT BETWEEN THE MANHOLE AND THE FIBER OPTIC PULLBOX. SEE DETAIL. LATERAL TONE WIRE SHALL BE PULLED WITH THE INTERDUCT AND SHALL BE SPLICED TO THE BACKBONE TONE WIRE.

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DATE	DESCRIPTION	DATE	DESCRIPTION						

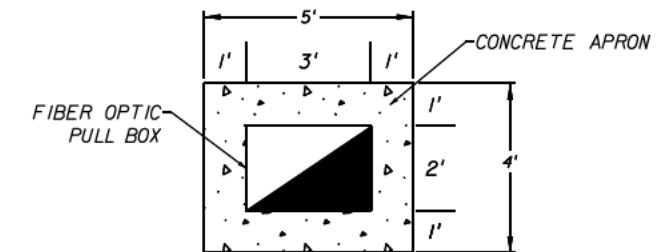
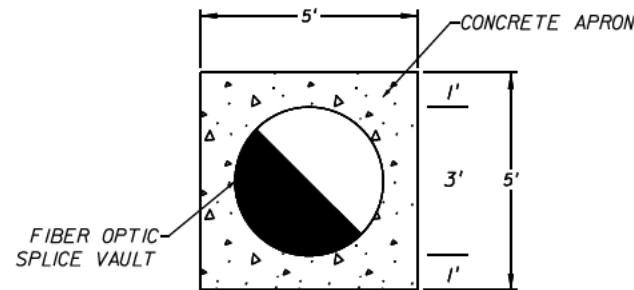
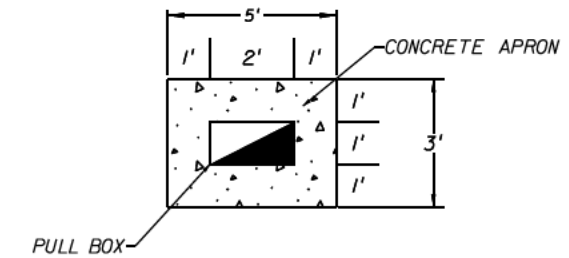
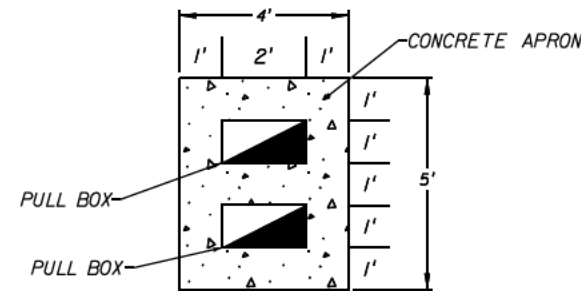
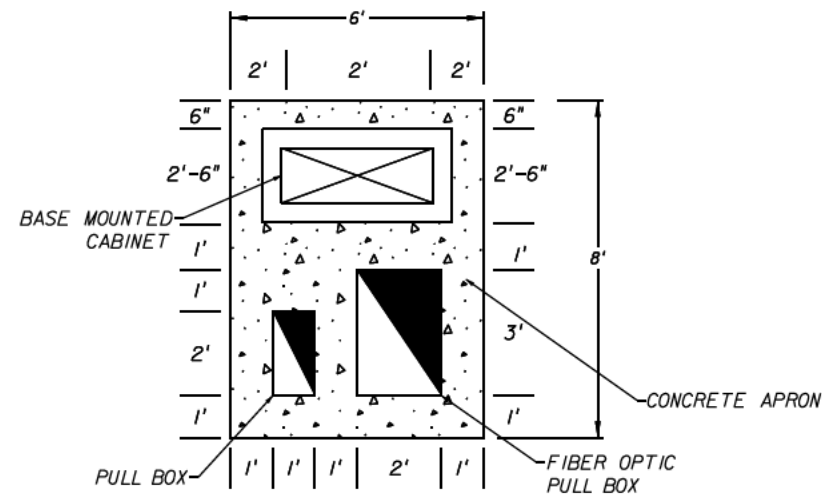
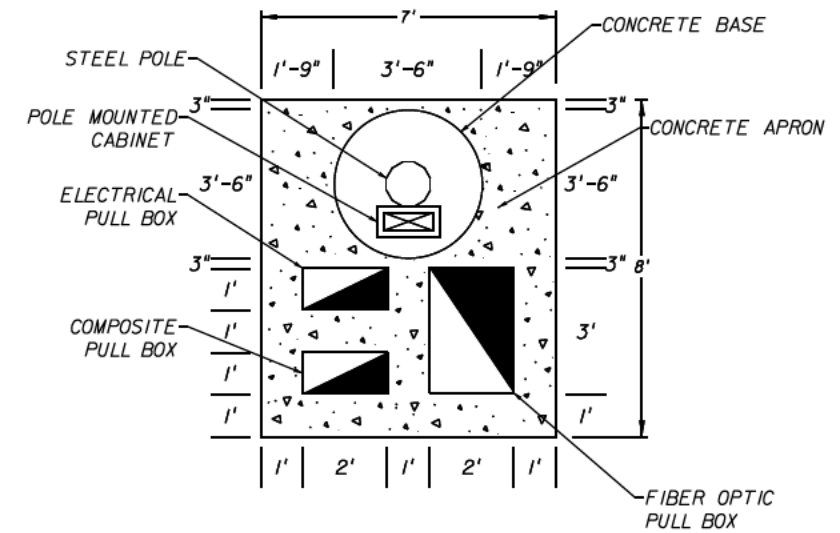
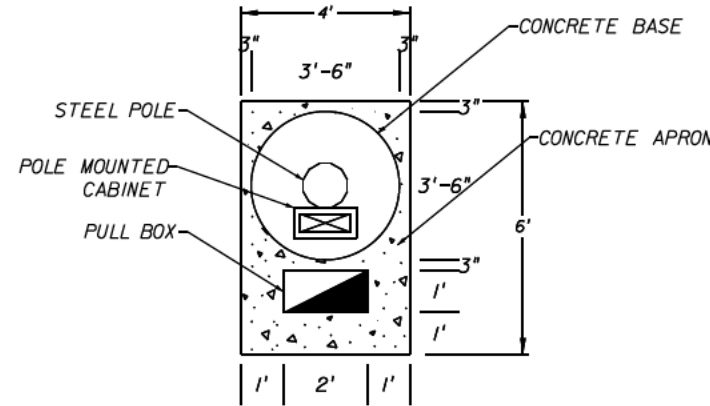
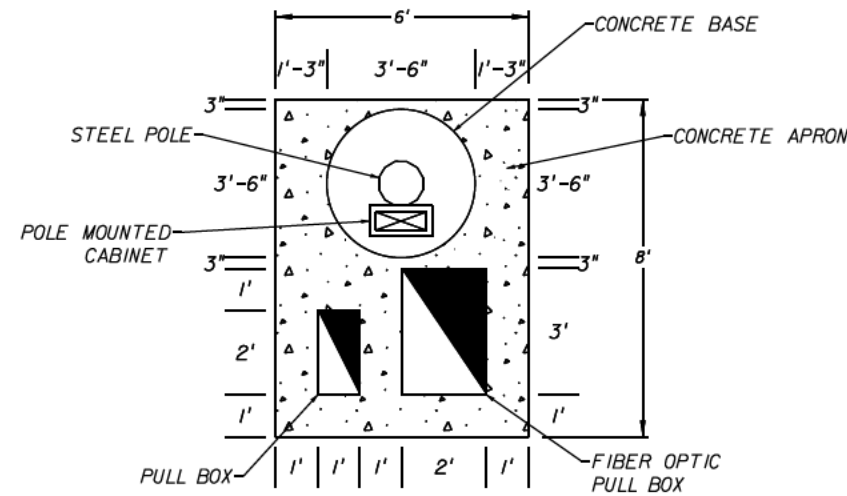
TYPICAL CONCRETE PAD DETAIL ON SLOPES  
N.T.S.



- NOTES:**
1. NUMBER OF PULL BOXES AND CONFIGURATION TO BE PER PLANS. MINIMUM SPACING IS TO BE MAINTAINED AS SHOWN.
  2. PULL BOX ON SLOPE MAY BE MOVED TO FLAT GRADE, BUT SLOPE PROTECTION IS TO REMAIN FOR EROSION CONTROL.
  3. CONCRETE PAD TO BE PER INDEX I7700.
- \* VARIES: TO TIE INTO MISC. ASPHALT

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			

CONCRETE MOW PAD DETAILS  
N.T.S.



**NOTE:**  
CONCRETE REINFORCEMENT  
TO BE PER INDEX I7500.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
ROAD NO. SR 429 PROJECT NO. 429-202

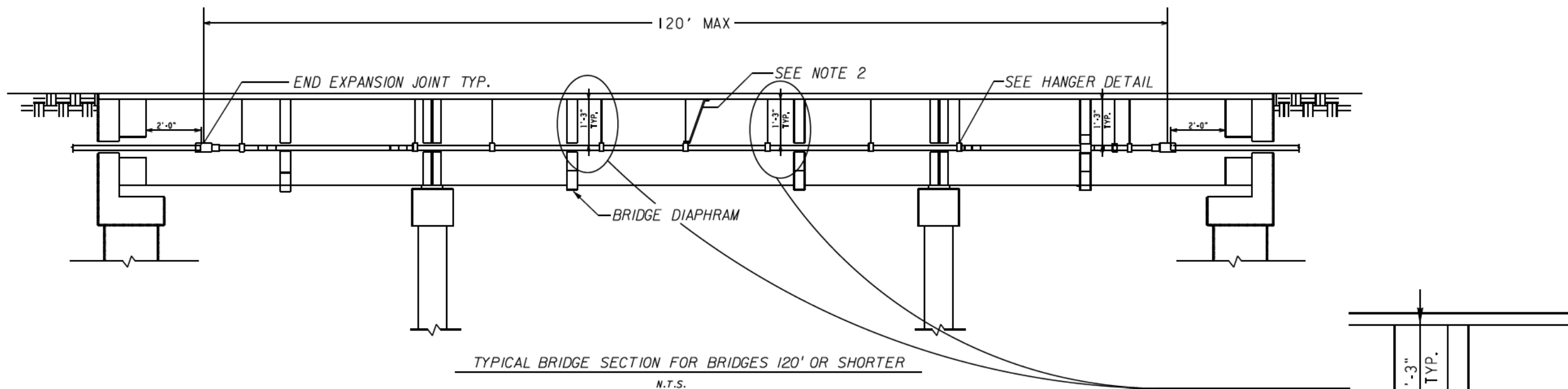
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**TYPICAL CONCRETE PULL BOX MOW PAD DETAILS**

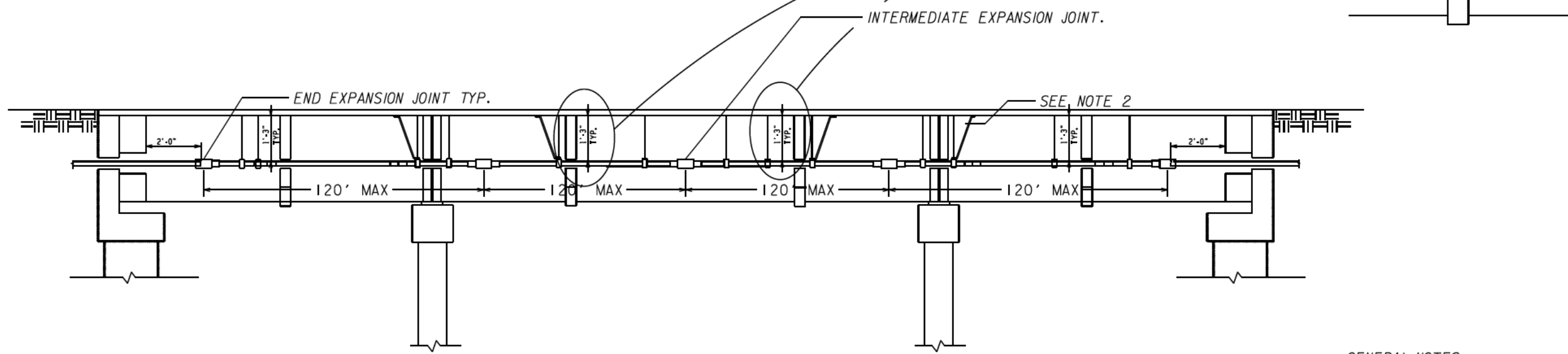
SHEET NO. IT-43







TYPICAL BRIDGE SECTION FOR BRIDGES 120' OR SHORTER  
N.T.S.



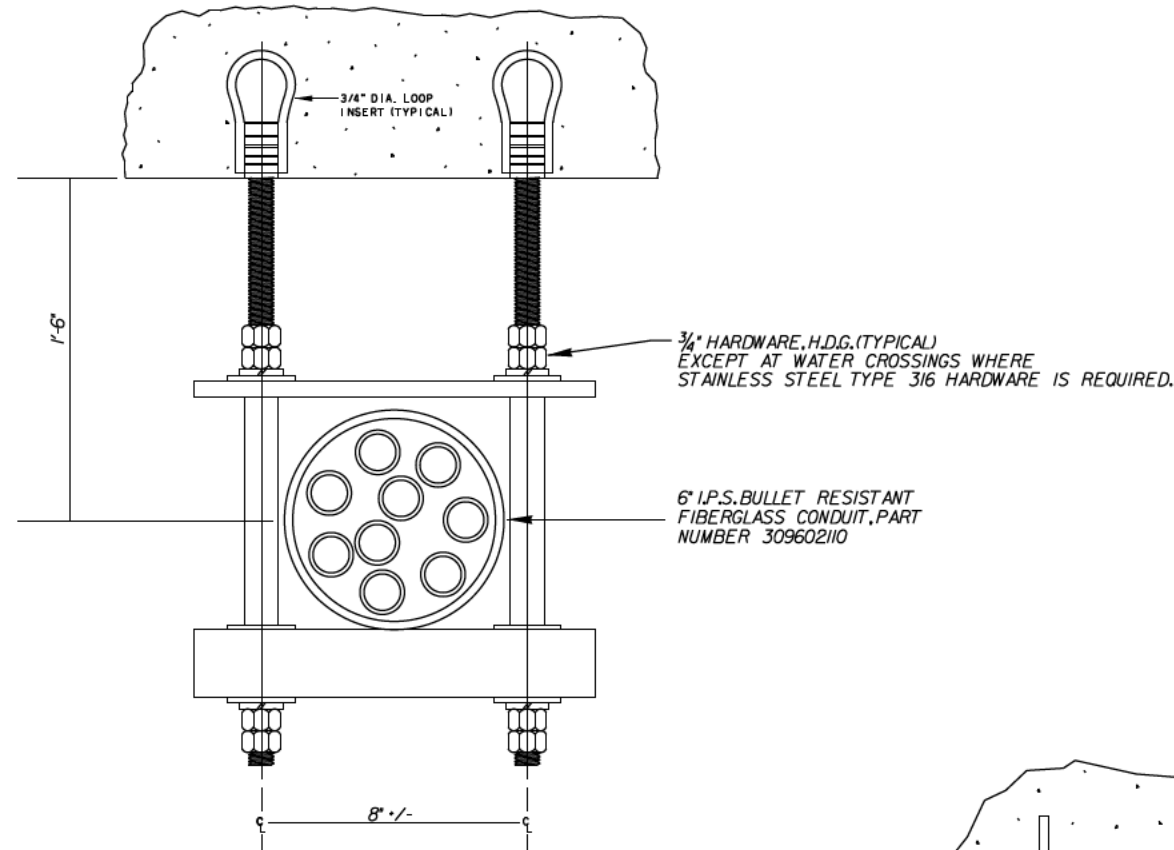
TYPICAL BRIDGE SECTION FOR BRIDGES 120' OR LONGER  
N.T.S.

GENERAL NOTES:

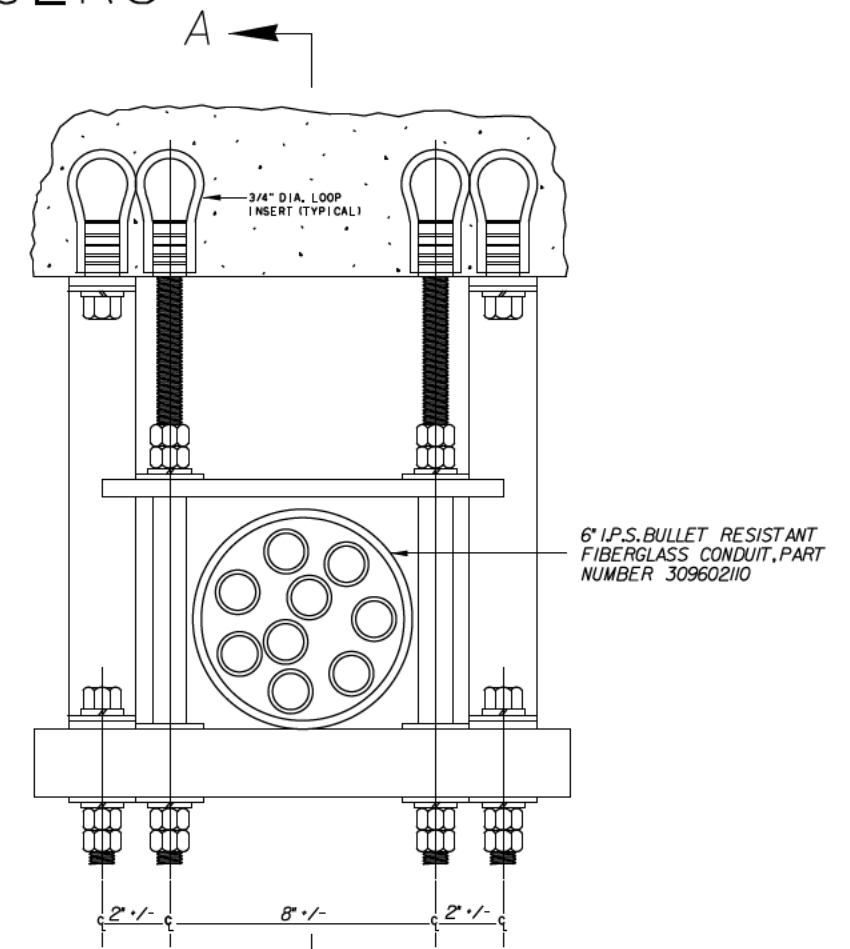
1. SPACING BETWEEN EXPANSION JOINTS SHALL BE NO GREATER THAN 120 FEET.
2. LATERAL MOVEMENT IS FIXED AT MID SPAN BETWEEN EXPANSION JOINT BY USE OF HANGER BRACE.
3. ALL FIBERGLASS CONDUIT HANGERS WILL BE SPACED NO MORE THAN 10' ON CENTER.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			

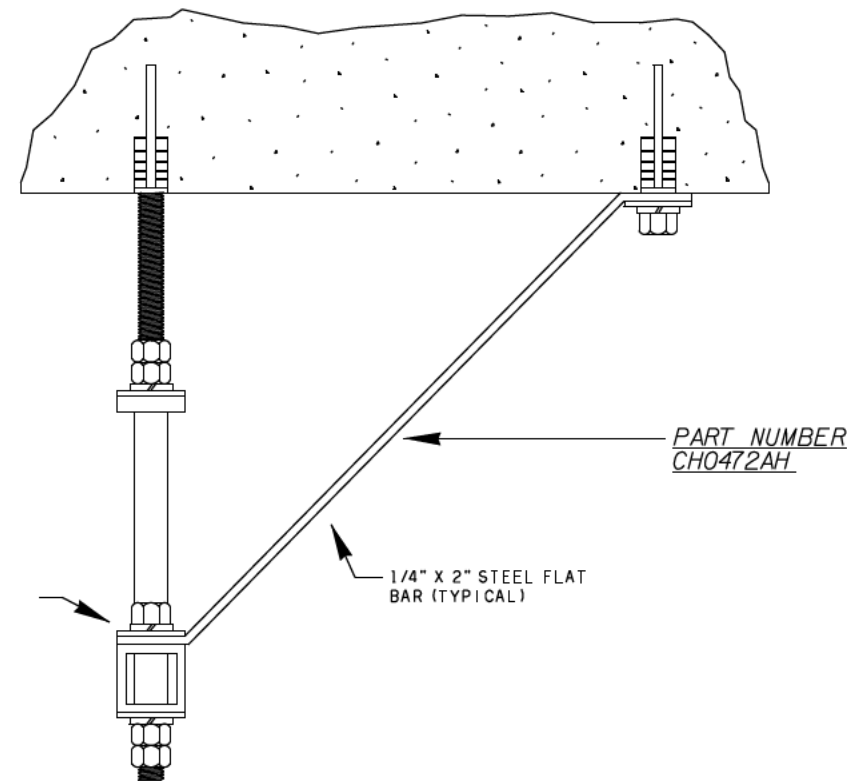
# 6" FIBERGLASS BRIDGE HANGERS



**INTERMEDIATE SUPPORT HANGER**  
PART NUMBER CH0472AG



**ANCHOR POINT SUPPORT HANGER**  
PART NUMBER CH0472AH  
FRONT VIEW

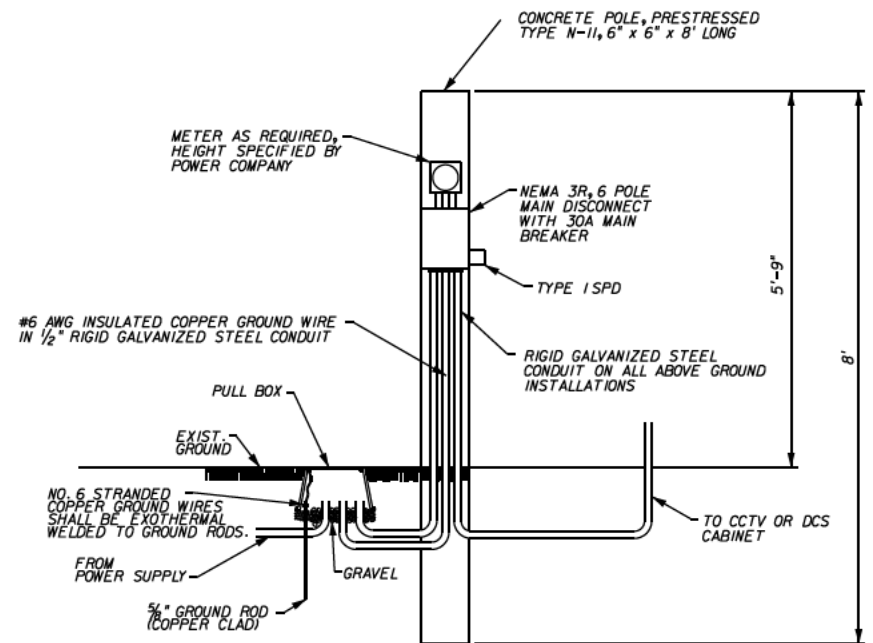


SECTION A-A

**NOTES:**

1. THE FIBER OPTIC CABLE (FOC) SHALL BE 6" DIAMETER I.P.S. BULLET RESISTANT FIBERGLASS CONDUIT AS MANUFACTURED BY OPTI-COM MANUFACTURING NETWORK, INC. (OMNI), PART NUMBER 309602110 OR APPROVED EQUAL.
2. THE HANGER SUPPORT ASSEMBLIES SHALL BE OMNI PART NUMBER CH0472AG. THE HANGER ANCHOR ASSEMBLY SHALL BE OMNI PART NUMBER CH0472AH OR APPROVED EQUAL.
3. THE MAXIMUM HANGER SPACING SHALL NOT EXCEED 10'-0" AND THE ANCHORING HANGERS SHALL BE PLACED AT EVERY 120 FT. MAXIMUM, OR WITHIN 5 FT. OF A PIER OR ABUTMENT.
4. HANGER INSERTS SHALL BE 3/4" STAINLESS STEEL LOOP INSERTS, HAVING A SAFE WORKING LOAD OF 1.5 KIP TENSION AND 2.7 KIP SHEAR MINIMUM. AT CONTRACTORS OPTION, OTHER METHODS OF SECURING HANGERS TO DECK UNDERSIDE MAY BE ACCEPTABLE PROVIDED THAT CALCULATIONS FOR THE HANGER SYSTEM AND SHOP DRAWINGS SIGNED AND SEALED BY A FLORIDA PROFESSIONAL ENGINEER ARE SUBMITTED FOR APPROVAL BY THE ENGINEER OF RECORD.
5. THE INSTALLATION OF HANGER INSERTS SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE FOLLOWING ITEMS:  
A. INSERT AND HANAGER LAYOUT  
B. CATALOG CUTS FOR HANAGER AND ANCHOR ASSEMBLIES.
7. INSERTS AND THREADED RODS ARE INCLUDED IN BRIDGE CONSTRUCTION. PAYMENT SHALL BE INCLUDED IN THE PRICE BID FOR SUPERSTRUCTURE CONCRETE FOR THE INDIVIDUAL BRIDGES. LOCATION OF INSERTS TO BE DETERMINED BY CONTRACTOR.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					



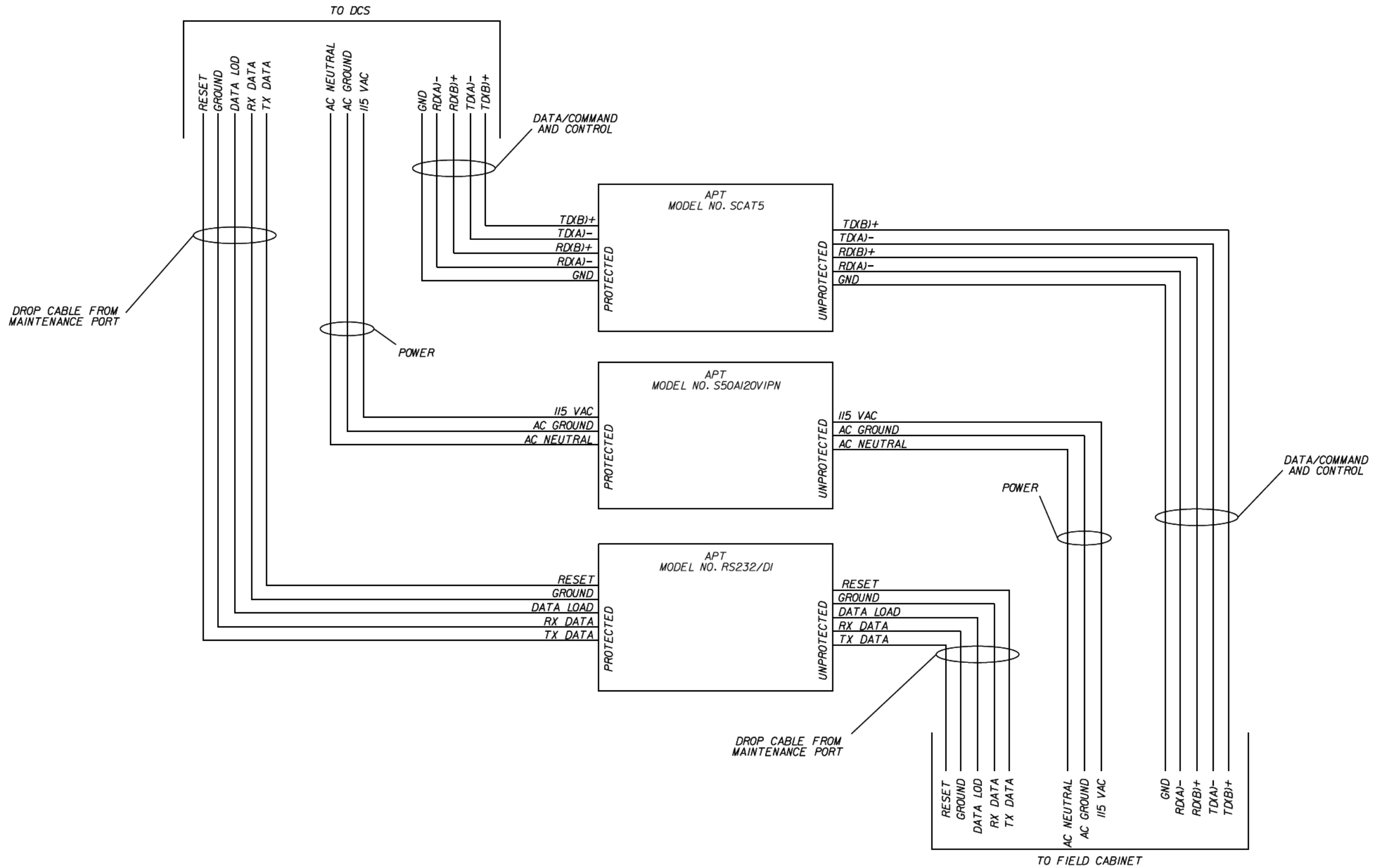
NOTES:

1. THE ENCLOSURE SHALL BE NEMA 3R, POLE MOUNTED, RAIN-TIGHT.
2. THE ENCLOSURE DOOR SHALL BE LOCKABLE BY PADLOCK AND FOUR KEYS SHALL BE PROVIDED TO THE MAINTAINING AGENCY. THE DOOR SHALL HAVE A MINIMUM OF THREE HINGES AND BE LATCH ABLE. SCREWS SHALL NOT BE USED TO ATTACH DOOR.
3. 480 V MINIMUM RATING BOLT-IN TYPE BREAKERS SHALL BE USED.
4. BUSBAR TO BE COPPER COATED AND HAVE A MINIMUM RATING OF 100 AMPS. WHEN THE BREAKER EXCEEDS 100 AMPS BUSBAR TO MATCH BREAKER AMPERAGE.
5. THE ENCLOSURE TO BE RIGIDLY ATTACHED TO POLE FACE.
6. A TYPE 1SPD SHALL BE WIRED INSIDE THE ENCLOSURE.
7. A MAIN BREAKER IS REQUIRED IN ALL SERVICE PANELS WITH TWO OR MORE BRANCH BREAKERS.
8. ALL SERVICE EQUIPMENT SHALL BE U.L. APPROVED.
9. ALL EDGES TO HAVE 1/2" CHAMFER.
10. TOP HOLE WILL BE 7/16" x 9/16" CAST OR DRILLED THROUGH POST 4" FROM END.
11. MOUNT METER BASE ON 1" x 1/2" KINDORF CHANNEL OR EQUAL. DO NOT DRILL OR PUNCH HOLES IN METER BASE. USE PROVIDED KNOCKOUTS.
12. MOUNT KINDORF CHANNEL USING 1/2" BOLT THROUGH POST OR LEAD ANCHOR AND BOLT. DO NOT USE POWER GUN TO SHOOT FASTENERS INTO POST. DO NOT USE PLASTIC ANCHORS.
13. VERTICAL DIMENSION BETWEEN KINDORF CHANNEL TO MATCH MOUNTING BOLTS IN METER BASE.
14. KINDORF CHANNEL IS NOT TO EXTEND PAST SIDES OF METER BASE.
15. WHEN MANUFACTURING POST, SECOND MOUNTING HOLE AND KINDORF CHANNEL INFORMATION DOES NOT APPLY.
16. USE 4500 PSI CONCRETE WITH (4) #4 REBARS SPACED IN A 4" X 4" SQUARE CENTERED IN THE POST.

SERVICE POINT DETAIL  
N.T.S.

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			IT-47

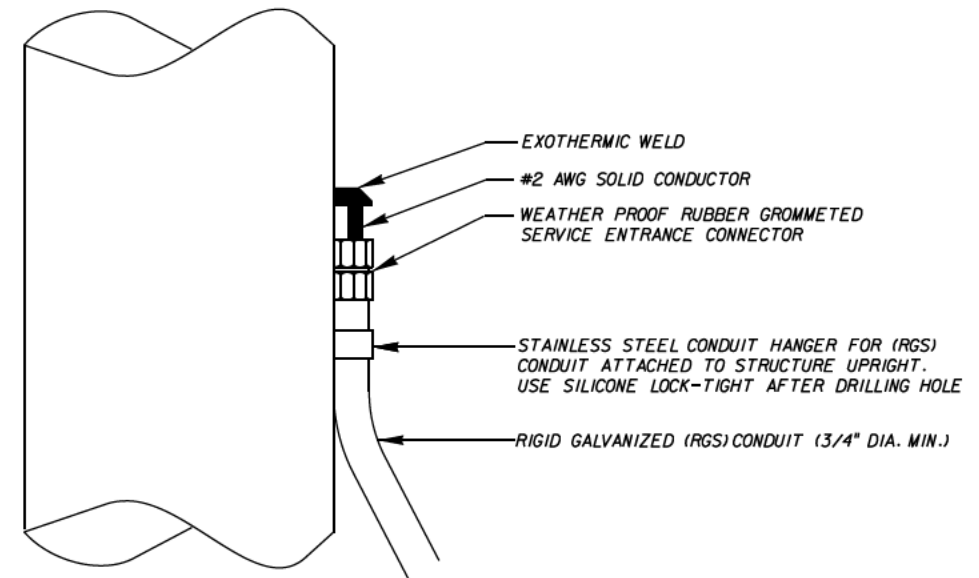
**DCS RF READER MODULE CABINET WIRING DETAIL**  
N.T.S.



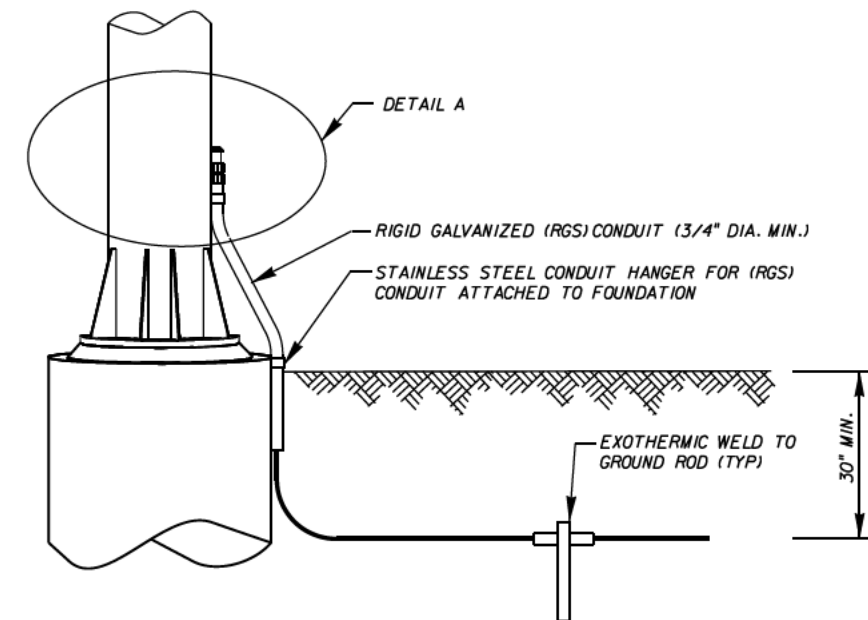
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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			

GROUNDING NOTES:

1. GROUND RODS SHALL BE 5/8" COPPER CLAD AND SHALL BE A MINIMUM OF 20' LONG.
2. ALL EXOTHERMIC WELDS SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS.
3. THE CONTRACTOR SHALL USE EXOTHERMIC WELD MOLDS RECOMMENDED BY THE MANUFACTURER SPECIFIC TO EACH WELD APPLICATION. MOLDS SHALL BE APPROVED BY THE MANUFACTURER FOR #2 AWG SOLID CONDUCTOR WIRE.
4. FOR STRUCTURAL POLES, FLAT-MOUNT VERTICAL WELD EQUIVALENT TO CAWELD TYPE VB, VS, OR VV SHALL BE USED, UNLESS OTHERWISE APPROVED BY THE AUTHORITY. IN ADDITION TO THE PREVIOUS REQUIREMENT, FOR H-FRAME PIPE SUPPORTS THE CONTRACTOR SHALL SELECT A MOLD SIZED TO THE PIPE.
5. ALL GROUNDING CONNECTIONS MADE BETWEEN THE STRUCTURE, GROUND RODS, CABINETS, POWER DISCONNECTS, AND ANY OTHER ITEM SHALL BE MADE USING #2 AWG SOLID CONDUCTOR TINNED BARE COPPER WIRE. THE CONNECTING WIRE SHALL BE BURIED PER N.E.C. AND SHALL BE ATTACHED TO GROUND RODS USING EXOTHERMIC WELDS.
6. THE STRUCTURE AND POWER DISCONNECT SHALL BE CONNECTED TO THE GROUNDING ARRAY. BASE-MOUNTED CABINETS WHICH SUPPORT ITS DEVICES ON THE STRUCTURE SHALL ALSO BE GROUNDED TO THE COMMON GROUNDING ARRAY IF THE CABINETS ARE WITHIN 60 FEET OF THE STRUCTURE.
7. THE DMS ENCLOSURE SHALL BE GROUNDED TO THE SIGN STRUCTURE WITH A GROUND STRAP PER MANUFACTURER'S RECOMMENDATIONS.
8. GROUND WIRE LEADS SHALL BE EXOTHERMICALLY WELDED TO THE STRUCTURAL POLES. WELD SHALL BE LOCATED ON THE SIDE OF THE STRUCTURAL POLE AT LEAST 1 FOOT ABOVE THE BOLT FLANGE. GRIND THROUGH GALVANIZED COATING TO EXPOSE BARE STEEL. ONCE BARE STEEL IS EXPOSED, WORK CALLED FOR IN THE REMAINDER OF THIS NOTE SHALL BE COMPLETED WITHOUT INTERRUPTION. HEAT BARE STEEL WITH TORCH FOR SEVERAL MINUTES AND MAKE WELD WHILE BARE STEEL IS WARM. AFTER WELD IS COMPLETE, COAT WELD AND ASSOCIATED STEEL WITH COLD GALVANIZING SPRAY WHILE WELD IS STILL WARM.
9. GROUND WIRE LEADS SHALL BE EXOTHERMICALLY WELDED TO THE H-FRAME OF THE ELECTRICAL SERVICE DISCONNECT. WELD SHALL BE LOCATED ON THE SIDE OF THE H-FRAME AT LEAST 1' ABOVE THE CONCRETE PAD. GRIND THROUGH GALVANIZED COATING TO EXPOSE BARE STEEL. HEAT BARE STEEL WITH TORCH FOR SEVERAL MINUTES AND MAKE WELD WHILE BARE STEEL IS WARM. AFTER WELD IS COMPLETE, COAT WELD AND ASSOCIATED STEEL WITH COLD GALVANIZING SPRAY WHILE WELD IS STILL WARM.
10. IF ELECTRICAL SERVICE DISCONNECT IS NOT MOUNTED TO A STEEL H-FRAME, GROUND WIRE LEADS SHALL BE BONDED WITH A BURNDY CLAMP TO THE ELECTRICAL SERVICE DISCONNECT. BOND SHALL BE LOCATED ON THE SIDE OF THE NEMA ENCLOSURE AND SHALL BE PROTECTED WITH NO-OX COMPOUND.
11. GROUND WIRE LEADS SHALL BE BONDED TO EQUIPMENT CABINETS WITH A BURNDY CLAMP. BOND SHALL BE LOCATED ON THE SIDE OF THE CABINET AND SHALL BE PROTECTED WITH NO-OX COMPOUND.
12. THE GROUNDING SYSTEM SHALL MEET THE REQUIREMENT OF 5 OHMS OR LESS AS MEASURED FROM THE SIGN STRUCTURE USING THE THREE-POINT GROUND MEASUREMENT TECHNIQUE. IF THE 5-OHM REQUIREMENT IS NOT MET, LONGER GROUND RODS MAY BE DRIVEN OR THE GROUNDING ARRAY MAY BE EXTENDED AT NO ADDITIONAL COST TO THE AUTHORITY UNTIL THE 5-OHM REQUIREMENT IS MET.
13. HALF-SPAN OR FULL-SPAN STRUCTURES SHALL BE EQUIPPED WITH COMPLETE GROUNDING ARRAYS ATTACHED TO BOTH UPRIGHTS.
14. IF EXISTING STRUCTURE IS PAINTED, CONTRACTOR SHALL PAINT CONDUIT AND WELD TO MATCH EXISTING COLOR. CAMERA POLES ARE PAINTED FLAT BLACK. SIGN STRUCTURES, IF PAINTED, SHALL BE PAINTED IN ACCORDANCE WITH CFX TECHNICAL SPECIFICATIONS SECTIONS 562 AND 975. THE COLOR OF THE SIGN STRUCTURE SHALL BE FEDERAL STANDARD 595B, COLOR NUMBER 26314 UNLESS OTHERWISE DIRECTED BY THE AUTHORITY.
15. GROUNDING CONDUCTOR SHALL BE BONDED AT TOP AND BOTTOM OF RIGID GALVANIZED CONDUIT PER N.E.S.C.



DETAIL A  
NTS



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

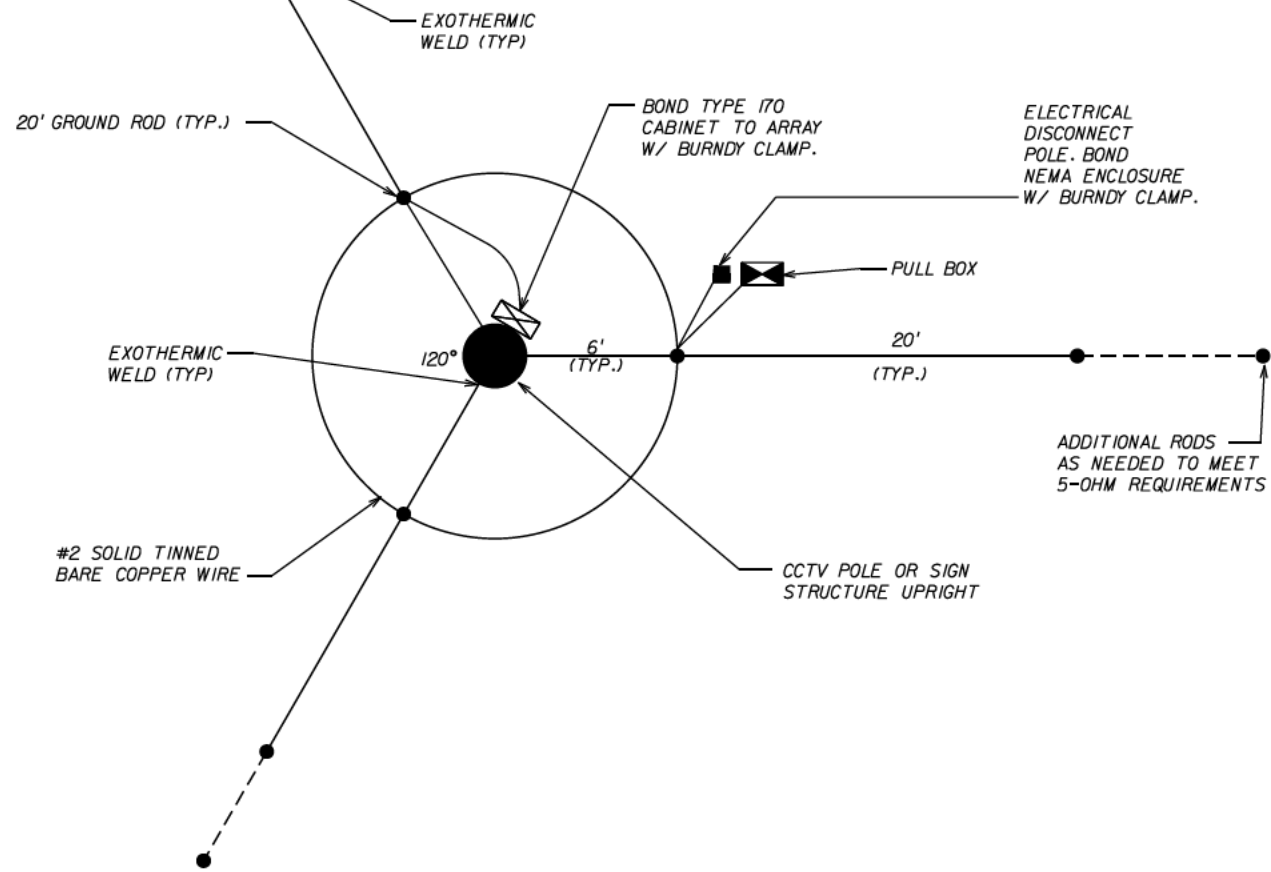
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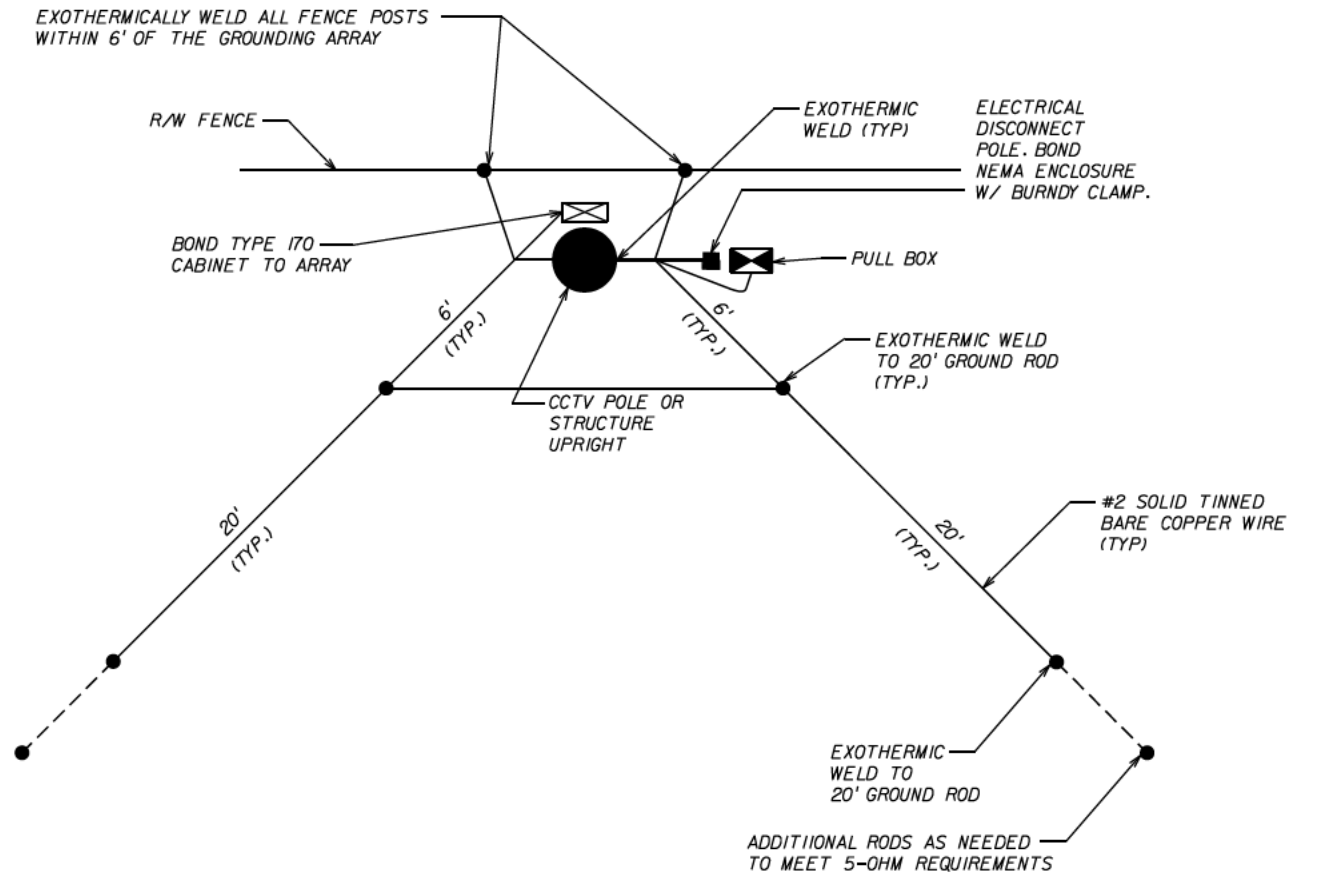
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**ITS DEVICE GROUNDING DETAILS**

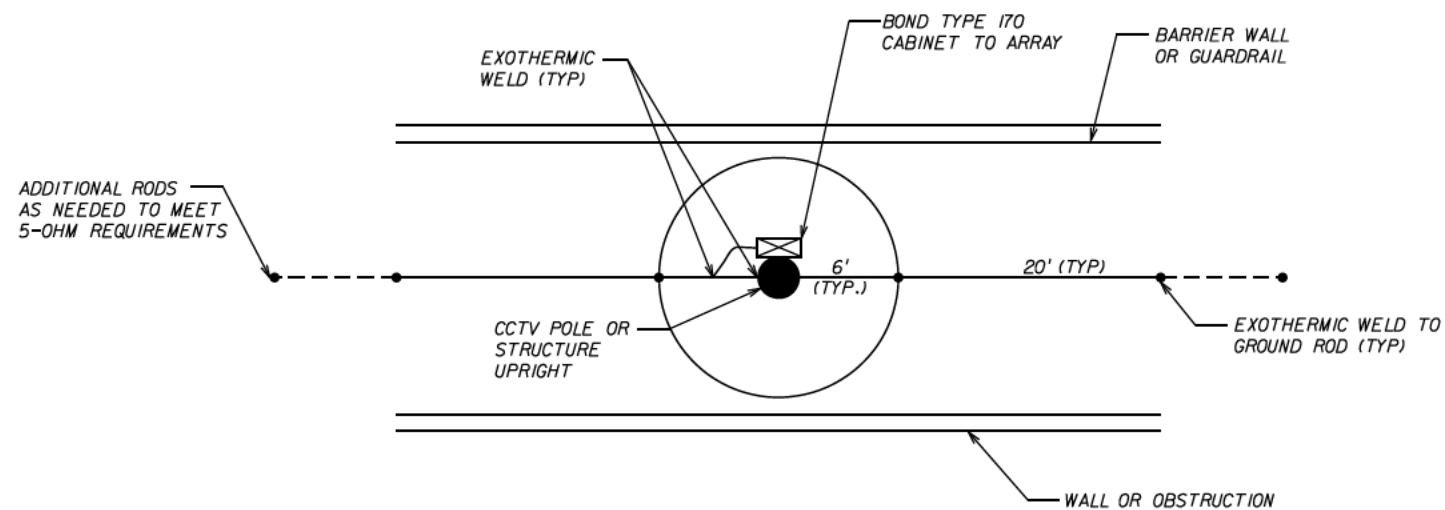
SHEET NO. IT-49



STANDARD GROUNDING ARRAY  
N.T.S.



GROUNDING ARRAY - LIMITED R/W  
N.T.S.



GROUNDING ARRAY - LIMITED R/W  
N.T.S.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

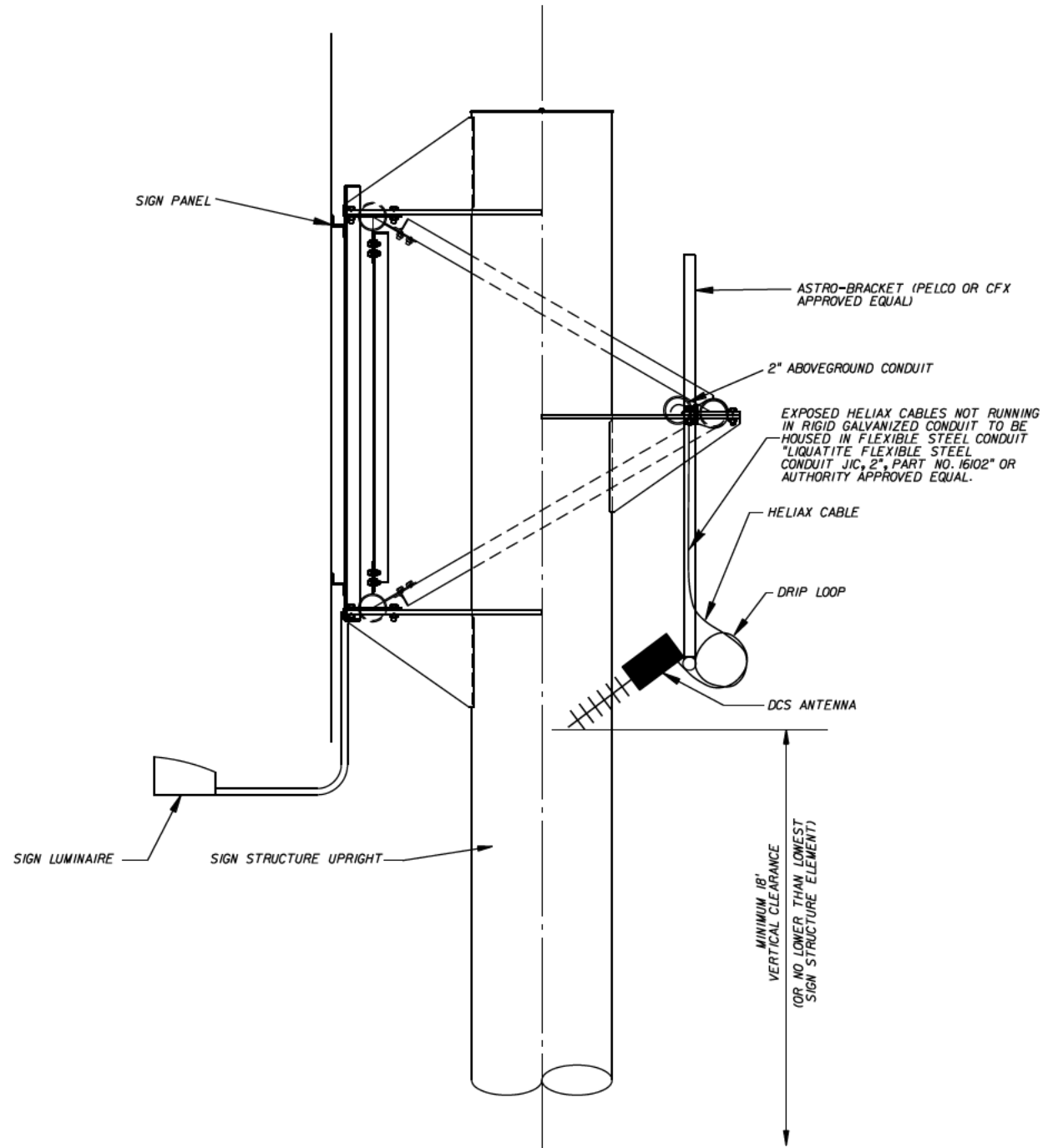
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PROJECT NO. 429-202

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

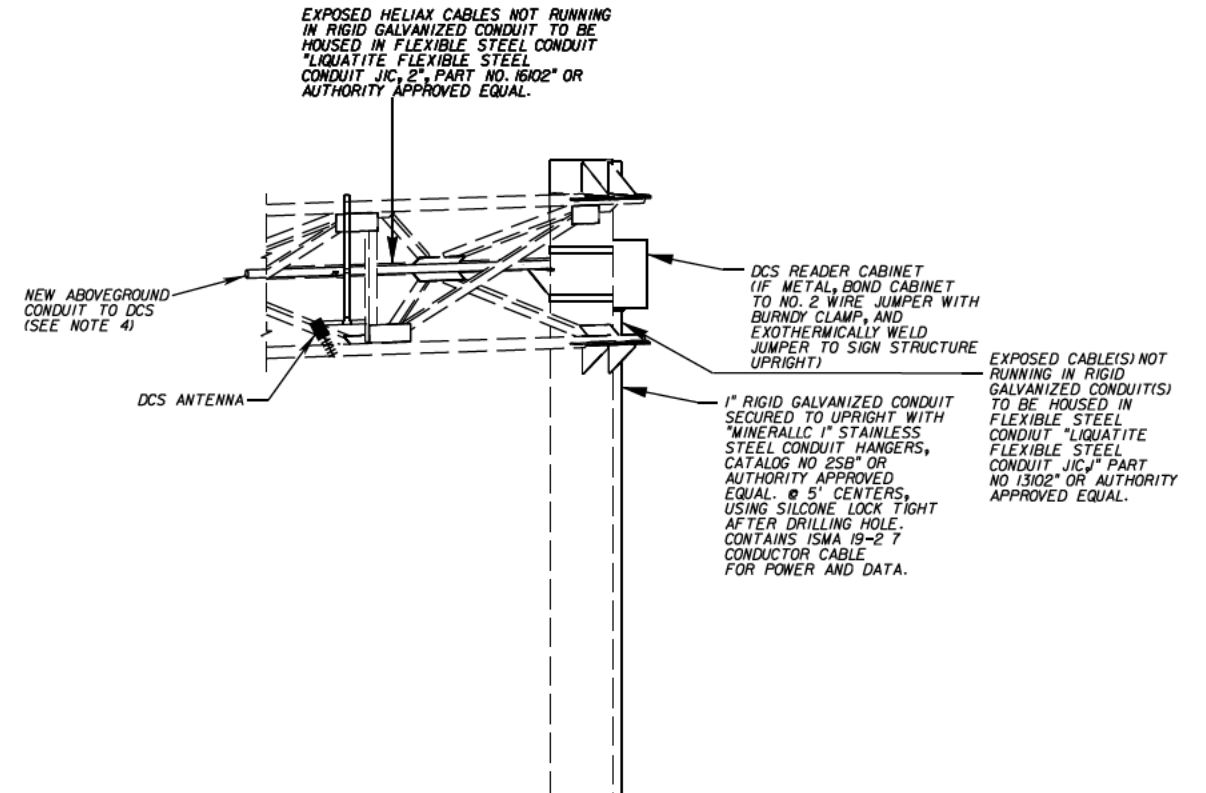
**ITS DEVICE GROUNDING DETAILS**

SHEET NO. IT-50

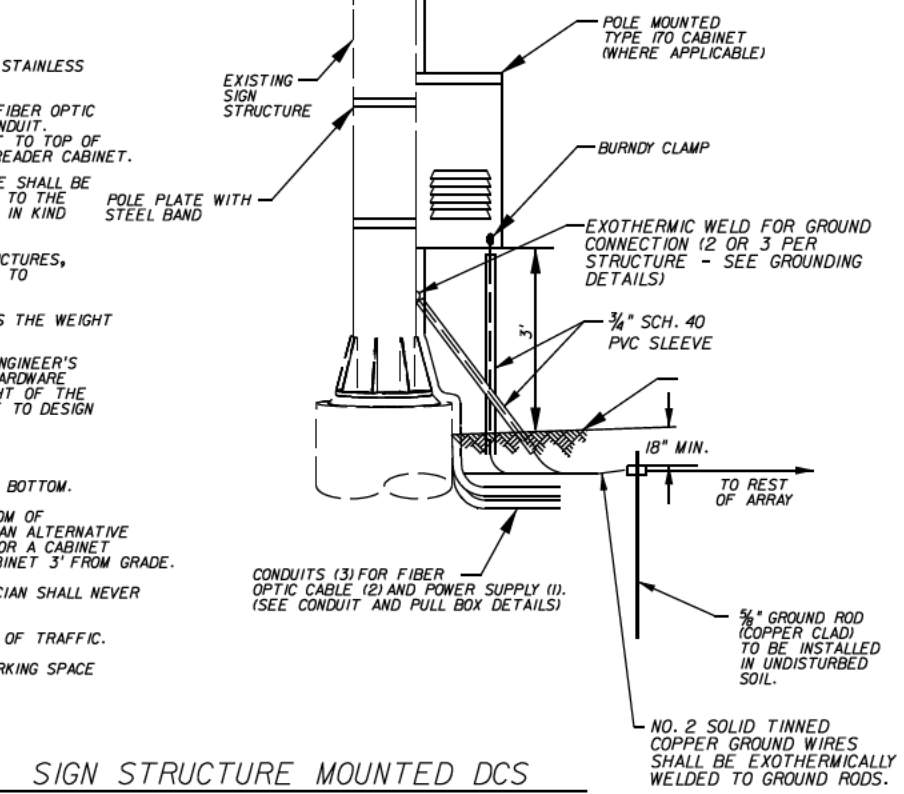


NOTES:  
ANTENNA SHOWN MOUNTED TO BACK CORD, FRONT INSTALLATION MAY BE USED WHEN APPLICABLE.

SIGN STRUCTURE MOUNTED DCS (PROFILE)  
N.T.S.



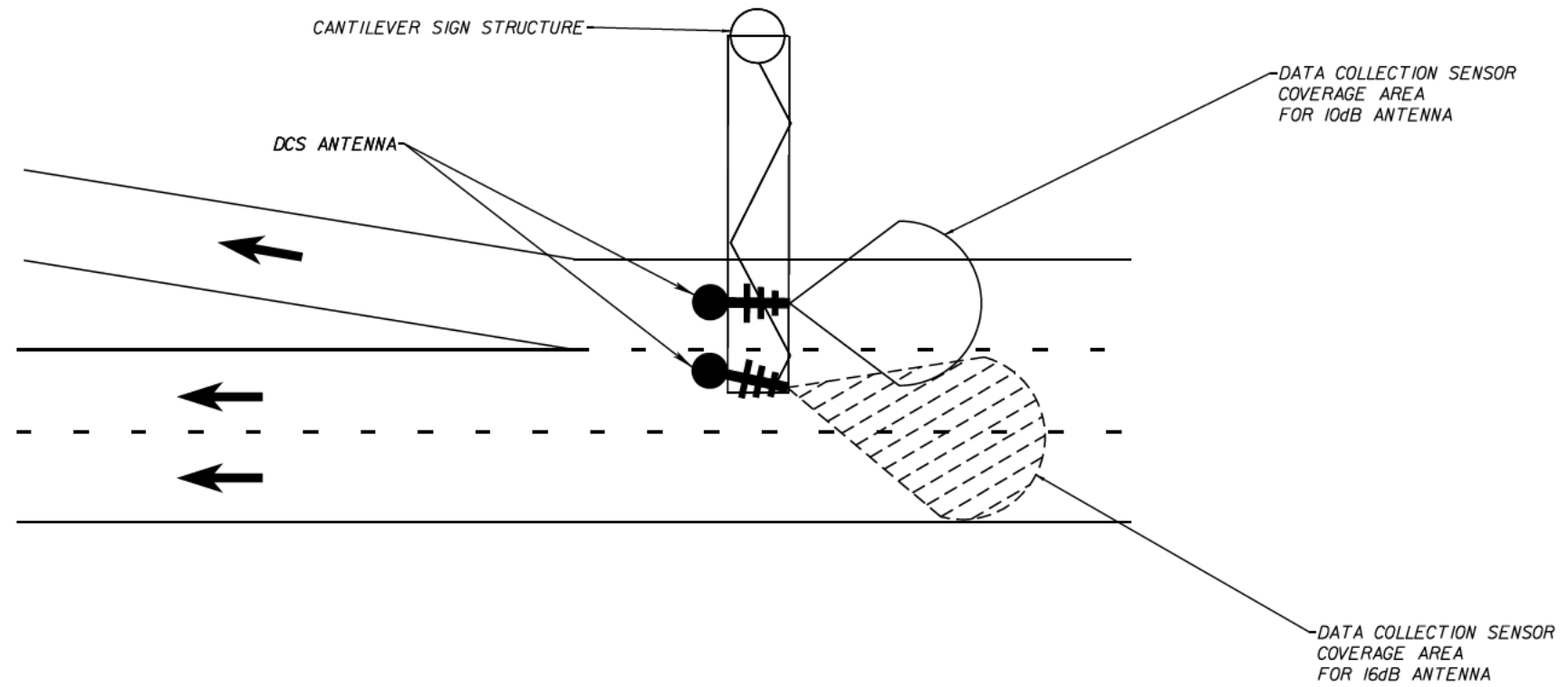
- NOTES:
- DCS CABINET TO BE MOUNTED TO STRUCTURE UPRIGHT WITH 2 STAINLESS STEEL BANDS.
  - BAND TYPE 170 CABINET TO UPRIGHT AT BACK OF POLE. RUN FIBER OPTIC CABLE AND POWER SUPPLY TO BOTTOM OF CABINET IN RIGID CONDUIT. CONTINUE SINGLE RUN OF RIGID CONDUIT FROM TOP OF CABINET TO TOP OF UPRIGHT. RUN CABLE INTO BOTTOM OF "J" HOOK AND INTO DCS READER CABINET.
  - WHEN INSTALLING DCS EQUIPMENT TO EXISTING STRUCTURE, CARE SHALL BE TAKEN AS TO NOT DAMAGE ANY EXISTING EQUIPMENT ATTACHED TO THE SIGN STRUCTURE. ANY DAMAGED EQUIPMENT SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
  - WHEN INSTALLING ABOVEGROUND CONDUIT ON EXISTING SIGN STRUCTURES, THE CONDUIT SHALL BE ATTACHED TO THE BACK TRUSS CHORD TO MINIMIZE VISUAL IMPACT.
  - STAINLESS STEEL BANDS SHALL BE SIZED TO SUPPORT 3 TIMES THE WEIGHT OF THE CABINETS AND ITS CONTENTS.
  - SHOP DRAWINGS FOR THE DCS MOUNT WILL BE REQUIRED FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO FABRICATION. THE MOUNTING HARDWARE OF THE DCS SHALL BE SIZED TO SUPPORT 3 TIMES THE WEIGHT OF THE DCS, AND TO RESIST 3 TIMES THE WIND LOAD ON THE DCS DUE TO DESIGN WIND SPEED OF 130 MPH.
  - ANTENNA COLOR SHALL BE SUBMITTED TO CFX FOR APPROVAL.
  - CONDUIT SHALL ENTER THE POLE MOUNTED CABINET FROM THE BOTTOM.
  - TYPE 170 CABINETS SHALL BE PLACED AS SHOWN 3' FROM BOTTOM OF CABINET TO GRADE. IF IMPRACTICAL DUE TO SITE GEOMETRICS, AN ALTERNATIVE LOCATION ADJACENT TO THE STRUCTURE SHALL BE DESIGNED FOR A CABINET PLACEMENT ON A TYPE II POLE WITH THE BOTTOM OF THE CABINET 3' FROM GRADE.
  - SLIDE OUT TRAY SHALL BE ORIENTED SUCH THAT THE TECHNICIAN SHALL NEVER HAVE THEIR BACK TO THE DIRECTION OF TRAVEL.
  - CABINET SHALL NEVER BE MOUNTED ON THE APPROACHING SIDE OF TRAFFIC.
  - IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS.



SIGN STRUCTURE MOUNTED DCS  
N.T.S.

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS SIGN STRUCTURE MOUNTING DETAIL	SHEET NO. IT-51
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

DCS COVERAGE AREA  
N.T.S.



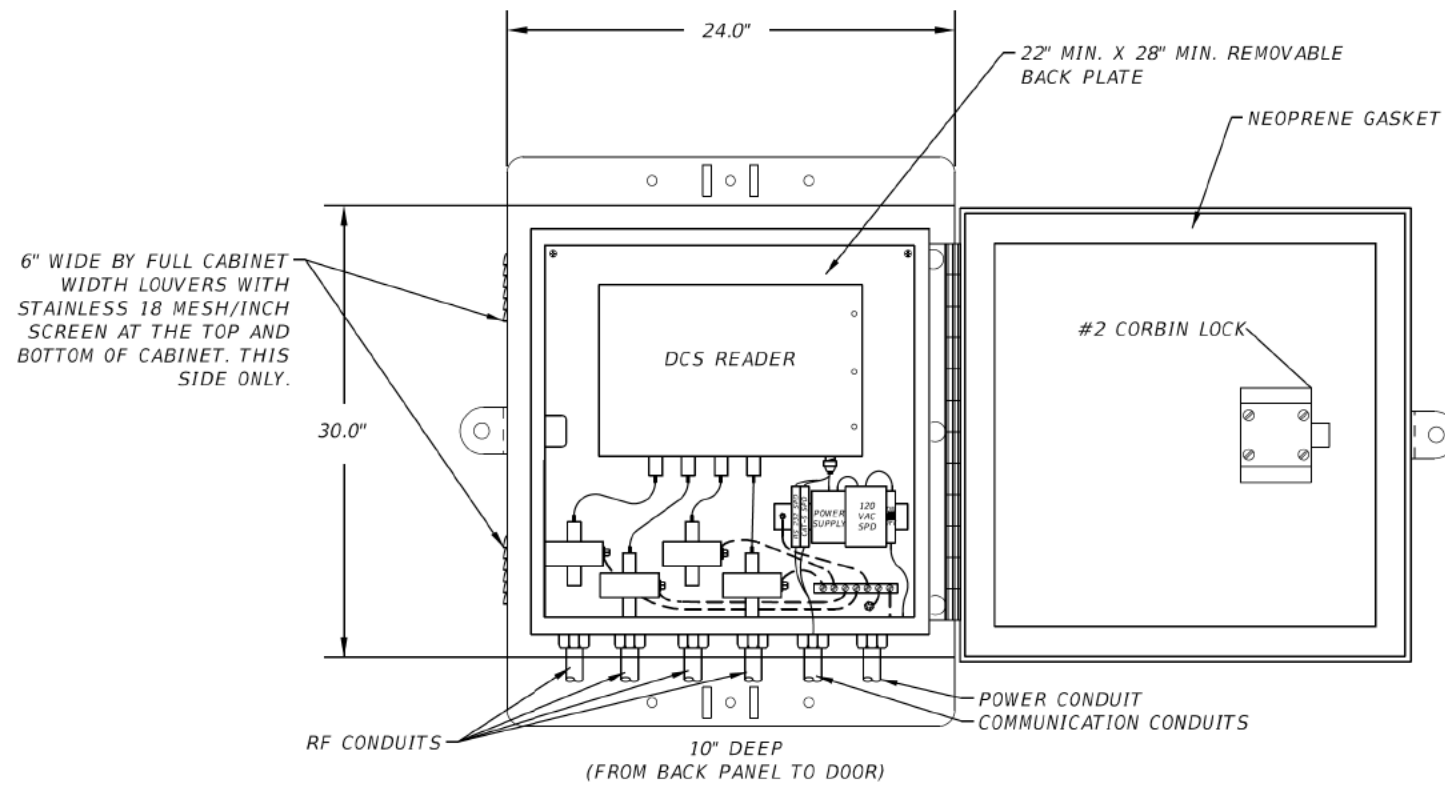
**NOTES:**

1. CONTRACTOR SHALL INSTALL DCS ANTENNAS PER MANUFACTURER'S RECOMMENDATION.
2. CONTRACTOR SHALL ACHIEVE LANE ACCURACY REQUIREMENTS DEFINED IN SECTION 663.
3. CONTRACTOR SHALL INSTALL ANTENNAS OVER THE TRAVEL LANES IF ACCURACY PER SPECIFICATIONS CANNOT BE ACHIEVED BY SIDE FIRE INSTALLATION ALONE.

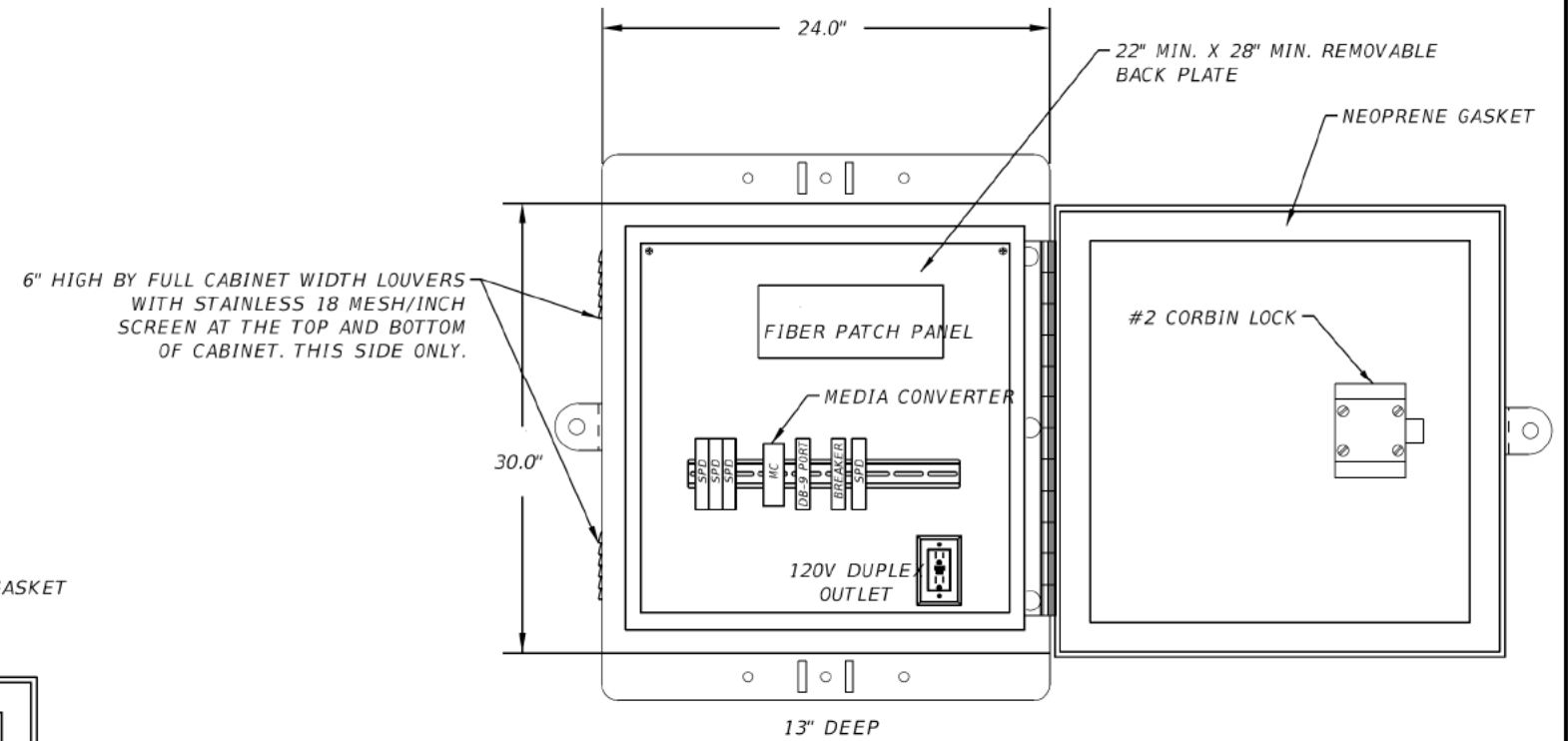
REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> 80 Spring Vista Drive Phone: 386.753.0558 DelBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>DATA COLLECTION SENSOR COVERAGE AREA</b>	SHEET NO.  IT-52
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			



DCS READER NEMA CABINET DETAIL  
N.T.S.



POLE / WALL MOUNTED CABINET (RF READER MODULE)



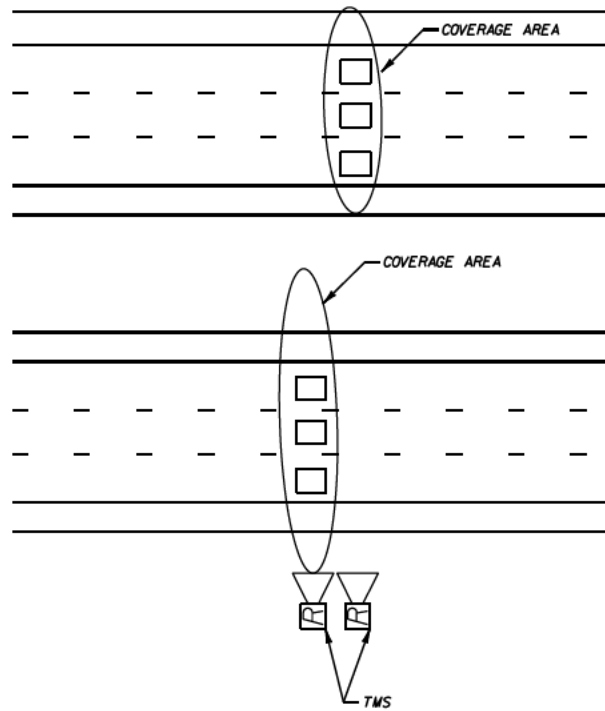
POLE / WALL MOUNTED CABINET (NEMA 3R ENCLOSURE)

NOTES:

1. CONTRACTOR TO SUBMIT A CABINET WIRING AND LAYOUT DIAGRAM FOR AUTHORITY APPROVAL PRIOR TO PROCUREMENT.
2. CABINET SHALL BE MINIMUM 3/16" THICK 5052 ALUMINUM.
3. CABINET SHALL INCLUDE A FOLD OUT LAPTOP SHELF WITH A MINIMUM 20" (WIDE) X 13" (DEPTH) SIZE AND CAPABLE OF BEARING A 15LB LOAD.
4. SEE WIRING DIAGRAM FOR EQUIPMENT TO BE INSTALLED IN THE CABINET.
5. DCS READER PORT ASSIGNMENT SHALL CONFIGURE LANE 1 TO PORT 1 FOR RIGHT MOST LANE OF TRAVEL.

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	DCS CABINET DETAIL	SHEET NO. IT-53
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					

TYPICAL 4 & 6 LANE DIVIDED HIGHWAY



TMS POLE & FOUNDATION GENERAL NOTES

1. DESIGN CRITERIA: DESIGNED IN ACCORDANCE WITH THE AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", 6TH EDITION. THE DESIGN WIND SPEED OF 130 MPH IS IN CONFORMANCE WITH THE FDOT "PLANS PREPARATION MANUAL" CURRENT EDITION.

NEW STRUCTURES ARE DESIGNED NOT TO EXCEED 1" DEFLECTION AT TMS LOCATION IN A 40 MPH (3 SECOND GUST) WIND.

FOUNDATION DESIGN PARAMETERS:

SOIL TYPE: COHESIONLESS (FINE SAND)  
 SOIL LAYER THICKNESS: 20 FEET  
 SOIL FRICTION ANGLE: 30°  
 SOIL WEIGHT (ASSUME SATURATED): 50 PCF  
 SLOPE (V:H): SEE DRILLED SHAFT TABLE OF VARIABLES ON TMS POLE STRUCTURE DETAILS (3 OF 3)

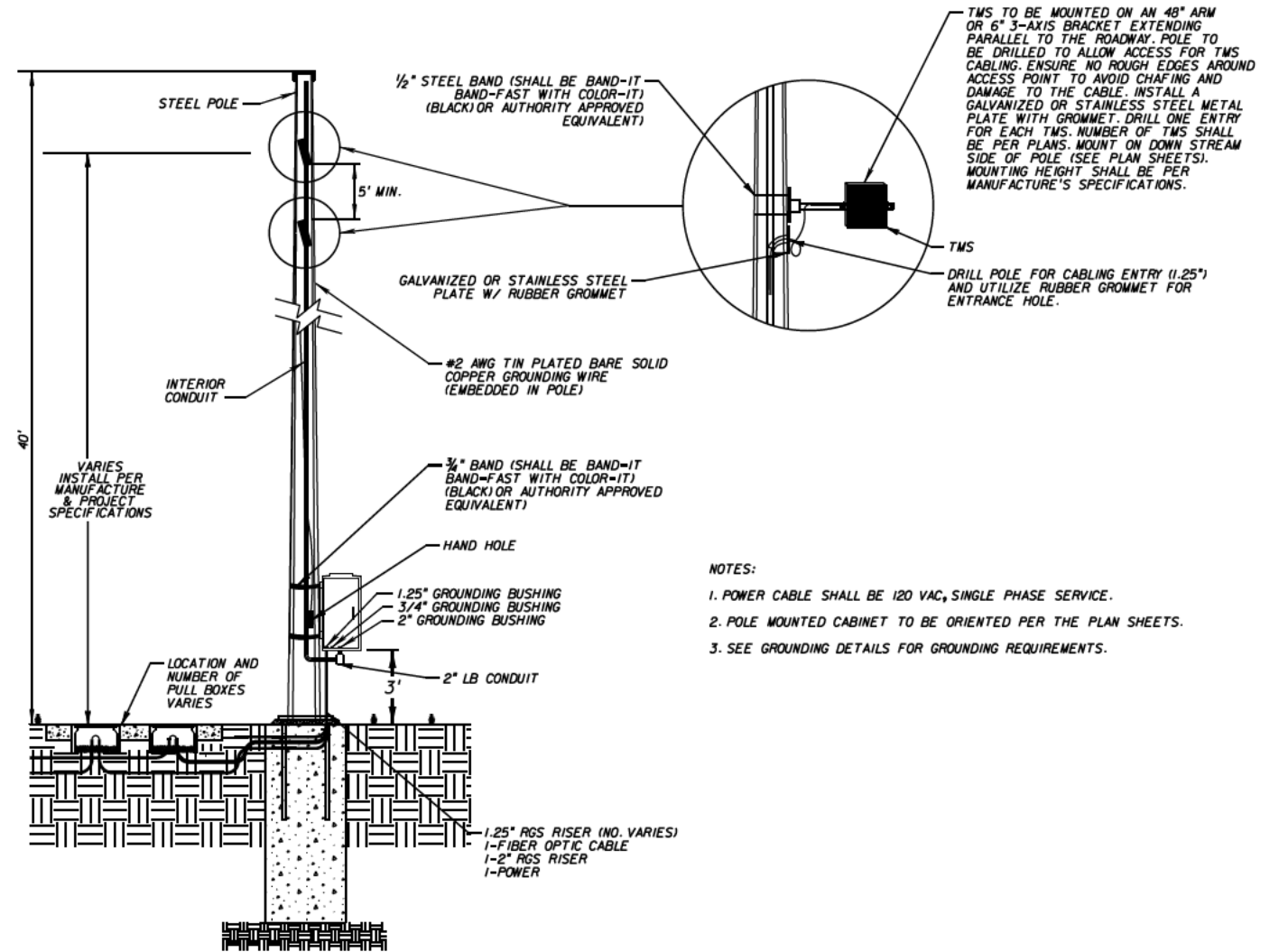
2. POLE SHAFT: ALL POLE SHAFTS SHALL BE 12 SIDED WITH A MINIMUM CORNER RADIUS OF 2" AND A CONSTANT TAPER OF 0.14 IN/FT. ALL POLES SHALL CONTAIN ONLY ONE LONGITUDINAL SEAM WELD. CIRCUMFERENTIAL WELDED TUBE BUTT SPLICES AND LAMINATED TUBES ARE NOT PERMITTED. LONGITUDINAL SEAM WELDS WITHIN 6" OF THE POLE BASE PLATE SHALL BE COMPLETE PENETRATION WELDS. ALL OTHER AREAS, SIZE THE PARTIAL PENETRATION WELDS TO AT LEAST 60% OF THE POLE TUBE THICKNESS.

3. HAND HOLES: SEE DETAILS.

4. CABLE SUPPORTS: ELECTRICAL CABLE GUIDES AND PARKING STAND (EYEBOLTS): TOP AND BOTTOM ELECTRICAL CABLE GUIDES SHALL BE LOCATED WITHIN THE POLE, ALIGNED WITH EACH OTHER. ONE CABLE GUIDE SHALL BE POSITIONED 2" BELOW THE HANDHOLE AND THE OTHER SHALL BE POSITIONED 1" DIRECTLY BELOW THE TOP OF TENON. A PARKING STAND SHALL BE POSITIONED 21" BELOW THE TOP OF THE HANDHOLE.

5. TMS STRUCTURE MATERIALS SHALL BE AS FOLLOWS:

- POLES -> ASTM A1011 GRADE 50 (WALL THICKNESS < 1/4")
- > ASTM A572 GRADE 50 (WALL THICKNESS >= 1/4")
- STEEL PLATES & POLE CAP -> ASTM A709 GRADE 36 OR ASTM A36
- WELD MATERIAL -> E70XX
- BOLTS (EXCEPT ANCHOR BOLTS) -> ASTM A325, TYPE 1
- ANCHOR BOLTS -> ASTM F1554 GRADE 55
- NUTS FOR ANCHOR BOLTS -> ASTM A536 GRADE A HEAVY HEX
- WASHERS FOR ANCHOR BOLTS -> ASTM A436 TYPE 1
- HANDHOLE FRAME -> ASTM A709 GRADE 36 OR ASTM A36
- HANDHOLE COVER -> ASTM A1011 GRADE 50, 55, 60, OR 65 KSI
- STAINLESS STEEL SCREWS -> AISI TYPE 316
- NUT COVERS -> ASTM B26 (319-F)



NOTES:

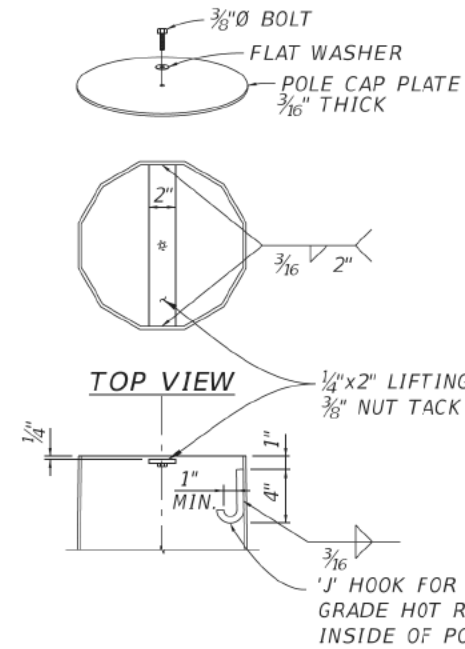
1. POWER CABLE SHALL BE 120 VAC, SINGLE PHASE SERVICE.
2. POLE MOUNTED CABINET TO BE ORIENTED PER THE PLAN SHEETS.
3. SEE GROUNDING DETAILS FOR GROUNDING REQUIREMENTS.

TYPICAL TMS AND DCS INSTALLATION DETAILS (ROUND STEEL POLE)

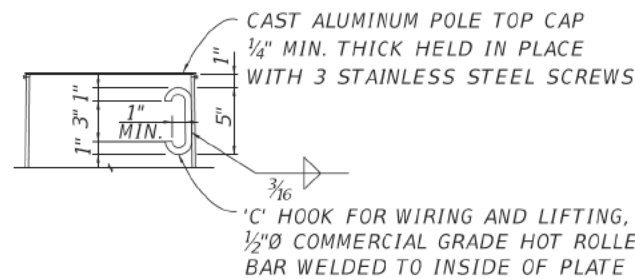
N.T.S.

6. ALL STEEL ITEMS SHALL BE GALVANIZED AS FOLLOWS:  
 ALL NUTS, BOLTS AND WASHERS -> ASTM F2329 DEPENDING ON SIZE  
 ALL OTHER STEEL ITEMS -> ASTM A123
7. REINFORCING STEEL SHALL BE ASTM A615-96, GRADE 60.
8. CONCRETE SHALL BE CLASS IV (DRILLED SHAFT) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4 KSI FOR ALL ENVIRONMENTAL CLASSIFICATIONS.
9. GROUT SHALL HAVE A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 5 KSI AND SHALL MEET THE REQUIREMENTS OF SECTION 934. GROUT AFTER POLE IS SET AND PROPERLY PLUMBED.
10. ALL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE (STEEL) ANSI/AWS D 1.1 (CURRENT EDITION).
11. SHOP DRAWINGS FOR EACH STRUCTURES TYPE ARE REQUIRED. FABRICATION SHALL NOT BEGIN UNTIL THESE SHOP DRAWINGS HAVE BEEN APPROVED.
12. THE FOUNDATION FOR THE TMS STRUCTURE SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 455 OF THE SPECIFICATIONS EXCEPT NO PAYMENT FOR THE FOUNDATION SHALL BE INCLUDED IN THE PAY ITEM FOR PROVIDING THE COMPLETE TMS STRUCTURE. PAYMENT FOR ANY INCIDENTAL ITEMS INCURRED IN FURNISHING AND INSTALLING THIS TMS STRUCTURE SHALL BE INCLUDED IN THE PAY ITEM FOR PROVIDING THE COMPLETE TMS STRUCTURE.
13. EXCEPT FOR ANCHOR BOLTS, ALL BOLT HOLE DIAMETERS SHALL BE EQUAL TO THE BOLT DIAMETER PLUS 1/16", PRIOR TO GALVANIZING. HOLE DIAMETERS FOR ANCHOR BOLTS SHALL NOT EXCEED THE BOLT DIAMETER PLUS 1/2".
14. THE STRUCTURE MUST BE ASSEMBLED AFTER GALVANIZING AND PRIOR TO SHIPMENT TO THE SITE TO ASSURE FIT UP. IT MUST BE DISASSEMBLED FOR SHIPPING.
15. THE STRUCTURE SHALL BE INSTALLED PLUMB.
16. THE STRUCTURE SHALL NOT BE ERECTED UNTIL THE FOUNDATION CONCRETE HAS ACHIEVED 70% OF THE MINIMUM SPECIFIED 28 DAY COMPRESSIVE STRENGTH.
17. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING CONDUIT OF F.O.N. CABLE AND TONE WIRE. ANY DAMAGE SHALL BE REPLACED IN KIND AT THE CONTRACTOR'S EXPENSE.
18. CONTRACTOR SHALL CONTACT UTILITY COMPANIES PRIOR TO FOUNDATION CONSTRUCTION AND FIELD VERIFY ADJACENT UTILITIES PRIOR TO DRILLING.
19. POLE SHALL BE GALVANIZED ACCORDING TO SPECIFICATION 962 AND POWDER COATED FLAT BLACK OVER GALVANIZATION BY THE MANUFACTURER.

REVISIONS				ENGINEER OF RECORD: CHRISTOPHER J. MILLS P.E. LIC. NO. 56801 <b>HNTB</b> 610 CRESCENT EXECUTIVE CT., SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 www.hntb.com CA NO.: 6500	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TMS POLE STRUCTURES AND FOUNDATIONS (1 OF 3)	SHEET NO. IT-54
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			



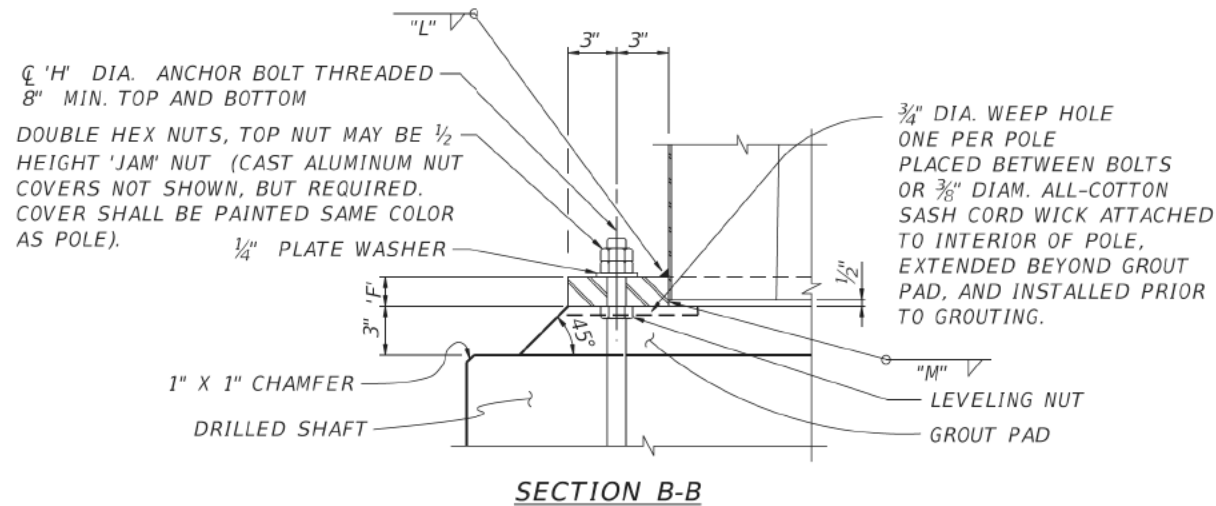
**POLE TOP CUT-AWAY  
(OPTION 'A')**



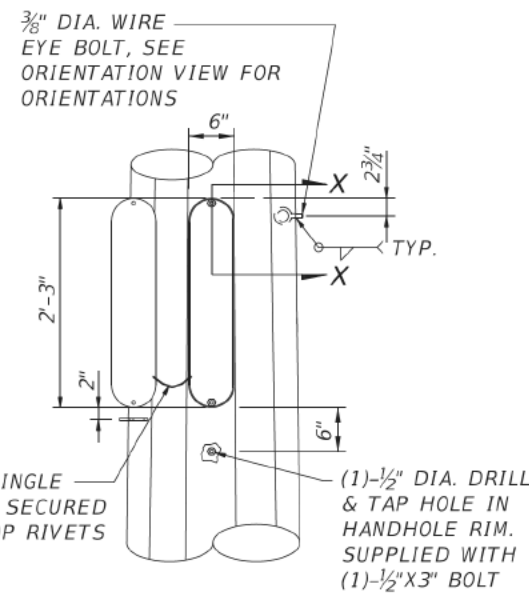
**POLE TOP CUT-AWAY  
(OPTION 'B')**

**POLE TOP NOTE:**  
ANY COMBINATION OF THE ABOVE TWO OPTIONS MAY BE USED,  
PROVIDED BOTH LIFTING AND WIRING IS ACCOMODATED.

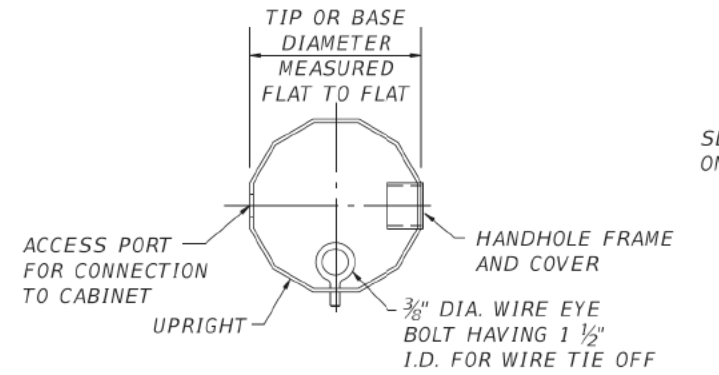
**DETAIL 1**



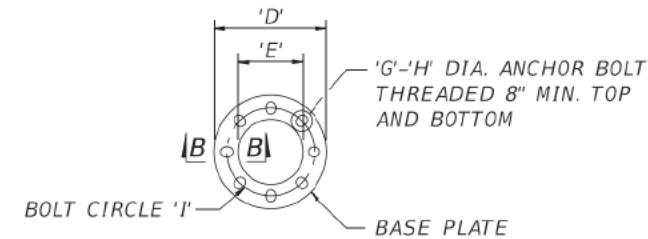
**SECTION B-B**



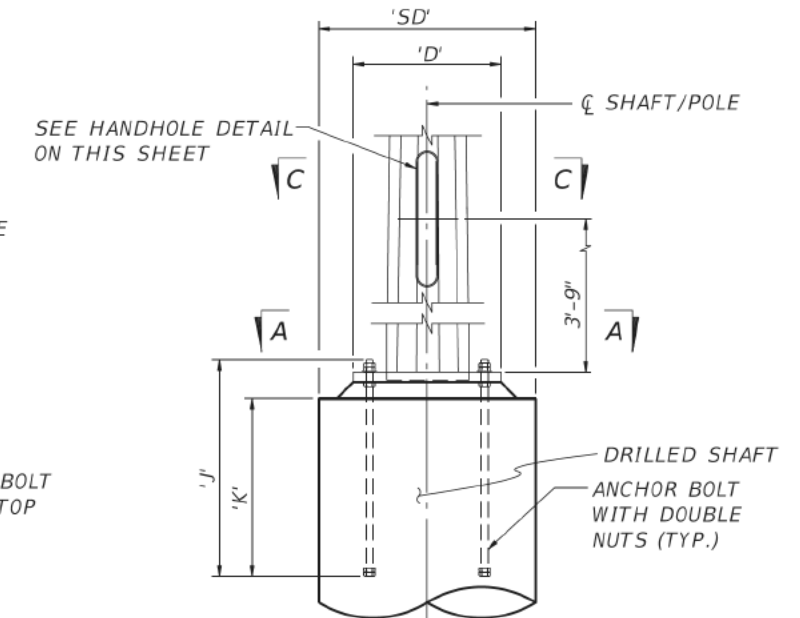
**HANDHOLE DETAIL**



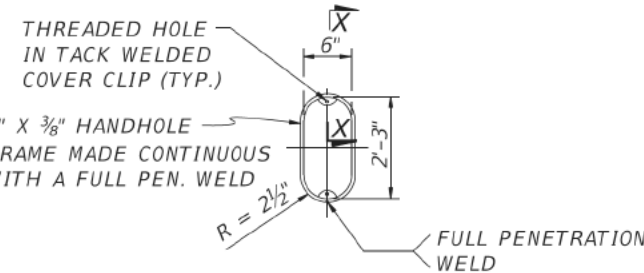
**SECTION C-C**



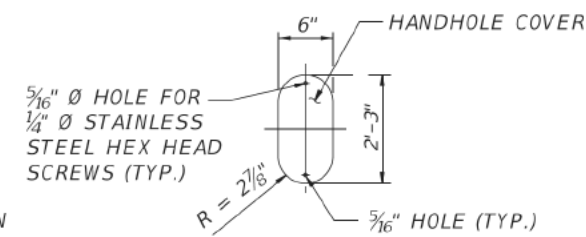
**SECTION A-A**



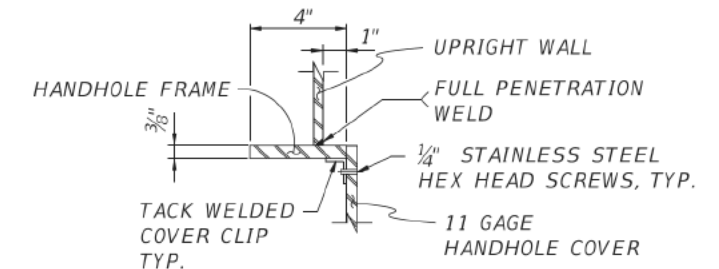
**DETAIL 2**



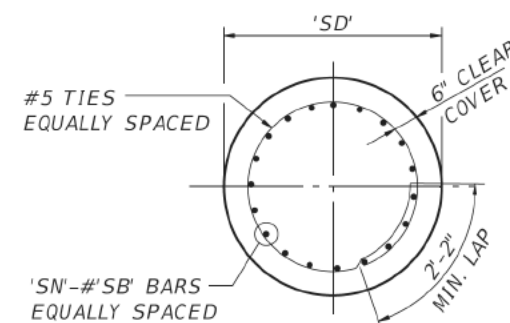
**HANDHOLE FRAME**



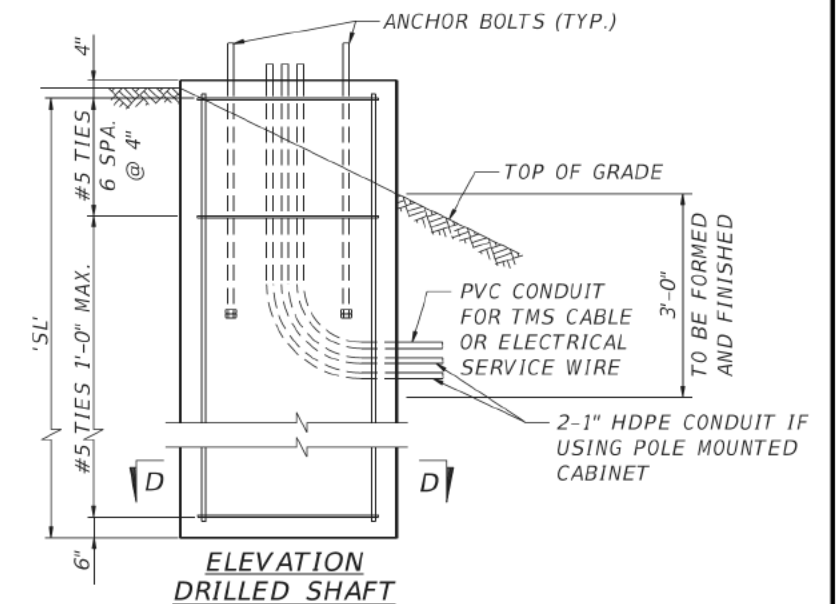
**HANDHOLE COVER**



**SECTION X-X**



**SECTION D-D**



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD:  
CHRISTOPHER J. MILLS P.E.  
LIC. NO. 56801

**HNTB**

610 CRESCENT EXECUTIVE CT.,  
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www.hntb.com  
CA NO.: 6500

**CENTRAL FLORIDA  
EXPRESSWAY AUTHORITY**

ROAD NO. SR 429

PROJECT NO. 429-202

**CENTRAL  
FLORIDA  
EXPRESSWAY  
AUTHORITY**

**TMS POLE STRUCTURES  
AND FOUNDATIONS (2 OF 3)**


SHEET  
NO.  
IT-54A

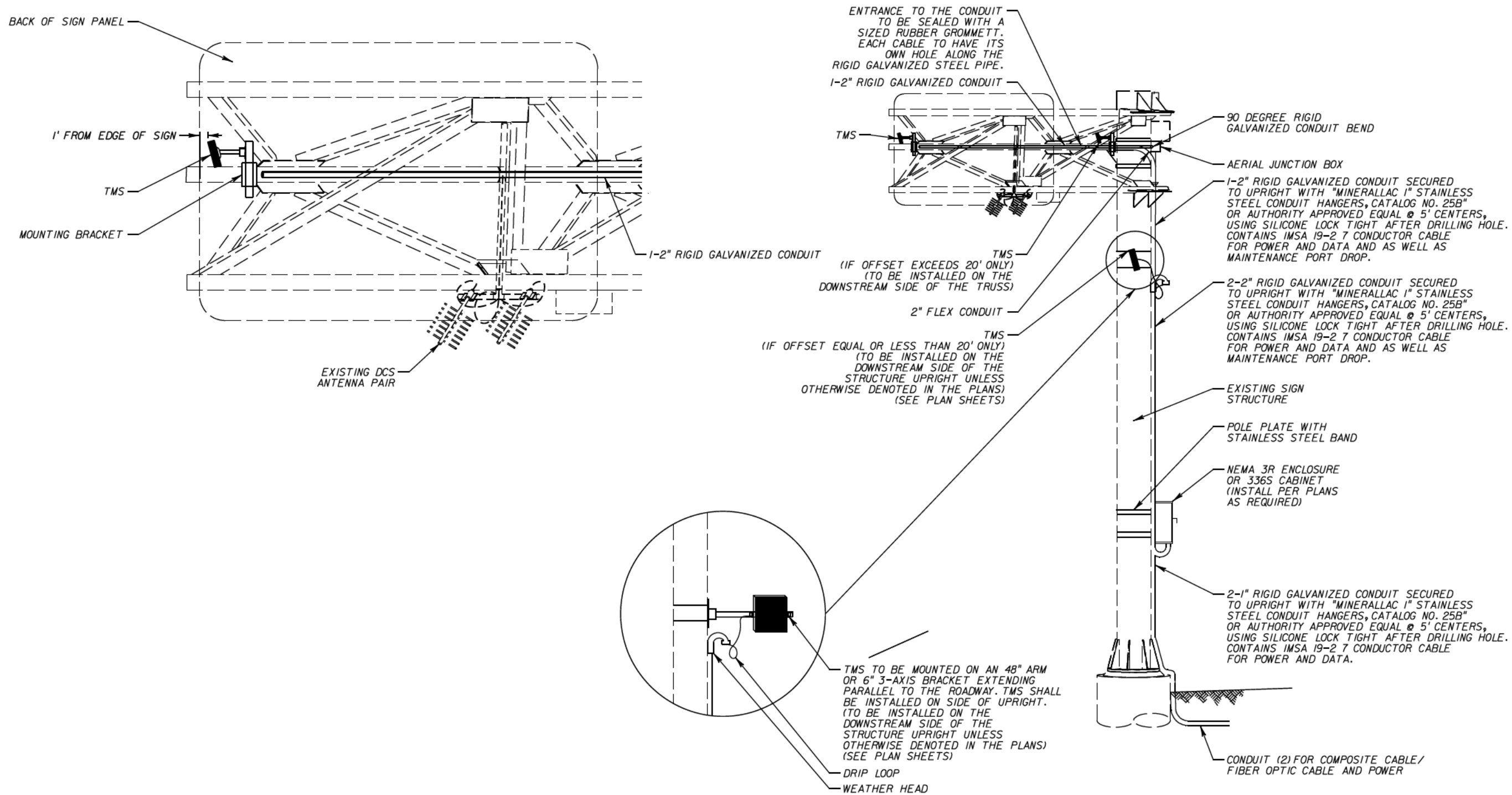
POLE VARIABLES													
TMS / POLE DESCRIPTION	TUBE				BASE VARIABLES								
	LENGTH (FT.)	BASE DIAMETER (IN.)	TIP DIAMETER (IN.)	"C" THICK (IN.)	"D" OUTSIDE DIAMETER (IN.)	"E" INSIDE DIAMETER (IN.)	"F" PLATE THICKNESS (IN.)	"G" NUMBER OF ANCHOR BOLTS	"H" BOLT DIAMETER (IN.)	"I" BOLT CIRCLE DIAMETER (IN.)	"J" BOLT LENGTH (IN.)	"L" BASE PLATE TOP WELD	"M" BASE PLATE BOTTOM WELD
40' POLE	40.00	16.00	10.40	0.375	28.00	16.00	2.00	8	1.00	22.00	35.00	1/2"	1/2"

DRILLED SHAFT VARIABLES								
TMS / POLE DESCRIPTION	"SL" SHAFT LENGTH (FT.)	"SD" SHAFT DIAMETER (FT.)	"SN" NUMBER OF BARS	"SB" BAR SIZE	"K" BOLT EMBEDMENT (IN.)	SLOPING GRADE (V:H)	"F" PLATE THICKNESS (IN.)	REMARKS
40' POLE	10.00	4.00	12	11	27.00	1:4	2.00	USE ON SLOPES 1:4 OR FLATTER

NOTE:

1. WORK THIS SHEET WITH TMS POLE STRUCTURES AND FOUNDATIONS (1 OF 3) AND (2 OF 3).

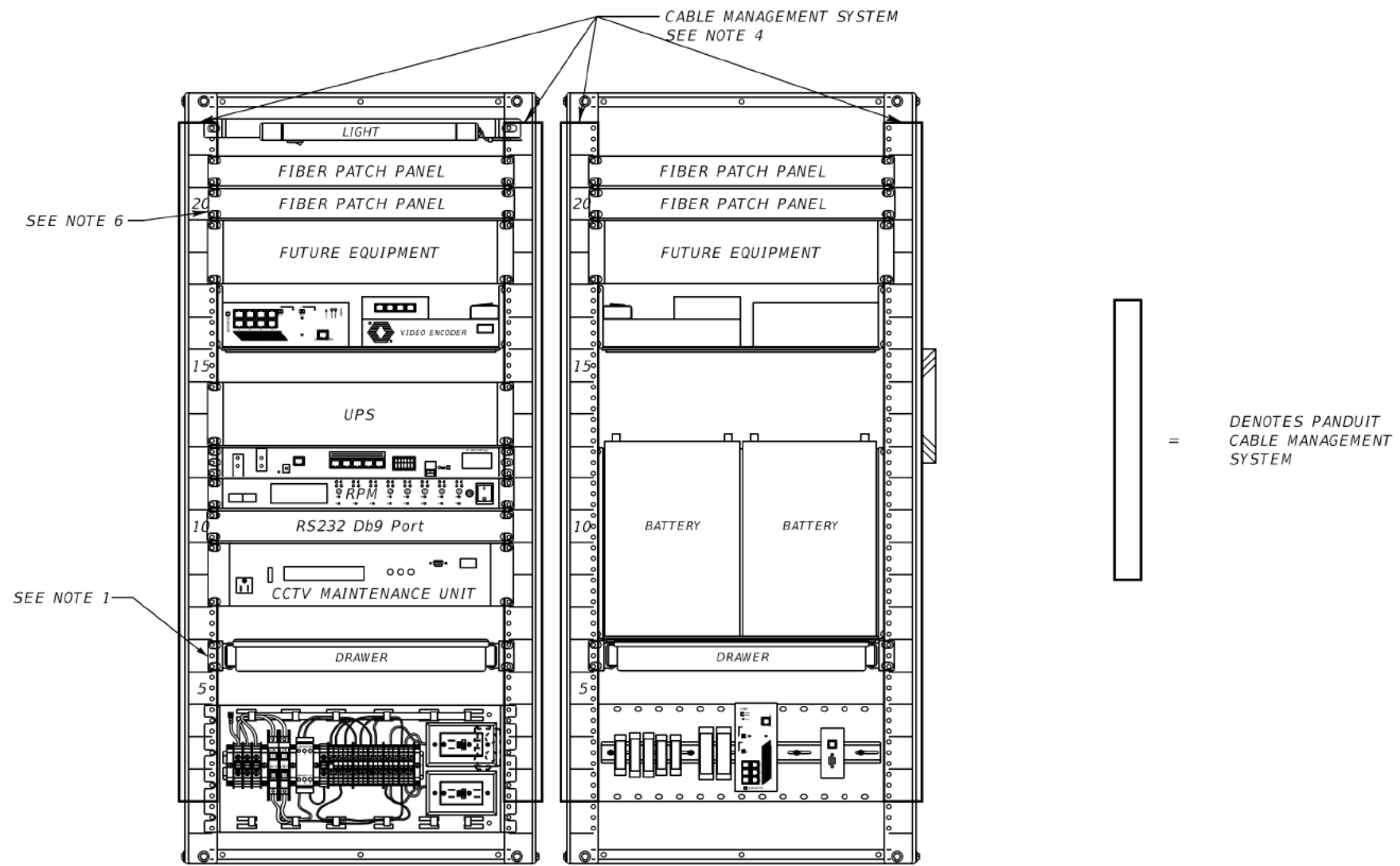
REVISIONS				ENGINEER OF RECORD: CHRISTOPHER J. MILLS P.E. LIC. NO. 56801  610 CRESCENT EXECUTIVE CT., SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 www.hntb.com CA NO.: 6500	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b> ROAD NO. PROJECT NO. SR 429 429-202		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	<b>TMS POLE STRUCTURES AND FOUNDATIONS (3 OF 3)</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		SR 429	429-202			IT-54B



**TYPICAL EXISTING SIGN STRUCTURES WITH TMS INSTALLATION DETAILS**

**N.T.S.**

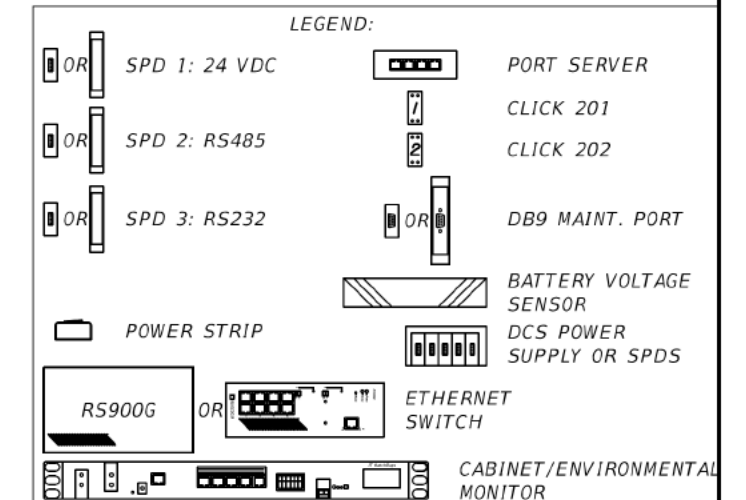
REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	TMS SIGN STRUCTURES INSTALLATION DETAILS	SHEET NO. IT-55
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					



FRONT VIEW BACK VIEW  
**336S CABINET LAYOUT 2**  
 (EXISTING WITH RECESSED POWER PANEL OR PROPOSED)

NOTES:

1. INTERNAL CABINET RACK ASSEMBLY SHALL BE ADJUSTED SO THAT THE PANDUIT CABLE MANAGEMENT SYSTEM IS NOT IN CONFLICT WITH THE CABINET INTERNAL DOOR LOCKING MECHANISM
2. THE CABINET SHALL PROVIDE FOR RACK MOUNTING AND SHELVING OF ALL EQUIPMENT.
3. CABINETS SHALL BE TYPE 170 MODEL 336S AND SHALL MEET CFX SPECIFICATION 668.
4. TYPE 170 CABINETS SHALL BE PLACED AS SHOWN 3' FROM BOTTOM OF CABINET TO GRADE. IF IMPRACTICAL DUE TO SITE GEOMETRICS, AN ALTERNATE LOCATION ADJACENT TO THE STRUCTURE SHALL BE DESIGNED FOR A CABINET PLACEMENT ON A TYPE II POLE WITH THE BOTTOM OF THE CABINET 3' FROM GRADE.
5. SLIDE OUT TRAY SHALL BE ORIENTED SUCH THAT THE TECHNICIAN SHALL NEVER HAVE THEIR BACK TO THE DIRECTION OF TRAVEL.
6. CABINET SHALL NEVER BE MOUNTED ON THE APPROACHING SIDE OF TRAFFIC.
7. IT IS THE INTENT OF THE ENGINEER TO PROVIDE A SAFE WORKING SPACE FOR THE FIELD TECHNICIANS.
8. PANDUIT DIMENSIONS ARE AS FOLLOWS:
  - A. LEFT SIDE OF CABINET; 2" WIDE BY 1.5" DEEP
  - B. RIDE SIDE OF CABINET - (LATCH SIDE); 2" WIDE BY 1" DEEP



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**Traffic Engineering Data Solutions, Inc.**  
 80 Spring Vista Drive Phone: 386.753.0558  
 DeBary, FL 32713 Fax: 386.753.0778  
 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
 ROAD NO. PROJECT NO.  
 SR 429 429-202

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

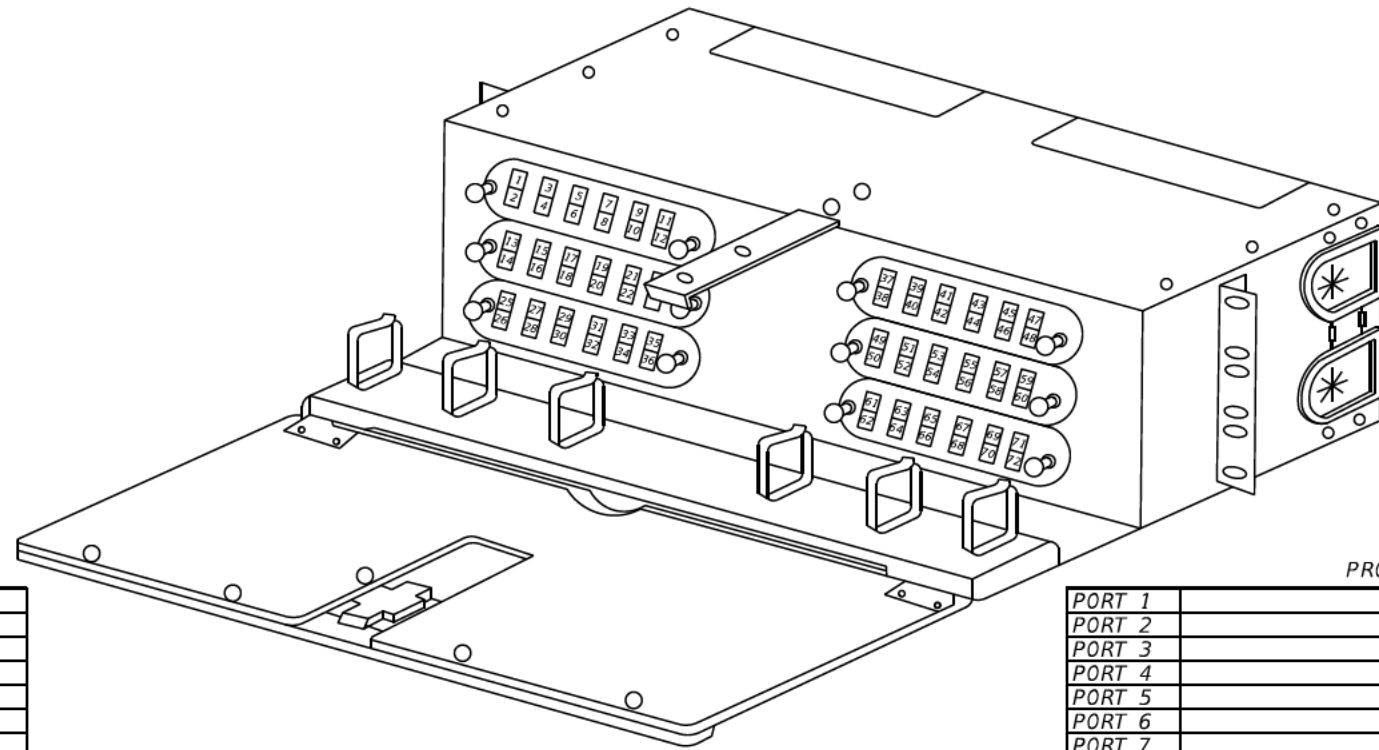
**ITS CABINET LAYOUT DETAIL**

SHEET NO.  
 IT-56

**PORT ASSIGNMENTS:**

- PANEL A: 1-12
- PANEL B: 13-24
- PANEL C: 25-36
- PANEL D: 37-48
- PANEL E: 49-60
- PANEL F: 61-72

**72 PORT FIBER OPTIC PATCH PANEL  
FOR RACK (SECTION 1A)**



□ = SC CONNECTORS

PROPOSED PORT ASSIGNMENTS (PPA1)

PORT 1		PORT 37	
PORT 2		PORT 38	
PORT 3		PORT 39	
PORT 4		PORT 40	
PORT 5		PORT 41	
PORT 6		PORT 42	
PORT 7		PORT 43	
PORT 8		PORT 44	
PORT 9		PORT 45	
PORT 10		PORT 46	
PORT 11		PORT 47	
PORT 12		PORT 48	
PORT 13		PORT 49	
PORT 14		PORT 50	
PORT 15		PORT 51	
PORT 16		PORT 52	
PORT 17		PORT 53	
PORT 18		PORT 54	
PORT 19		PORT 55	
PORT 20		PORT 56	
PORT 21		PORT 57	
PORT 22		PORT 58	
PORT 23		PORT 59	
PORT 24		PORT 60	
PORT 25	GIG DISTRIBUTION TX	PORT 61	
PORT 26	GIG DISTRIBUTION RX	PORT 62	
PORT 27	TX (SPARE)	PORT 63	
PORT 28	RX (SPARE)	PORT 64	
PORT 29		PORT 65	
PORT 30		PORT 66	
PORT 31		PORT 67	
PORT 32		PORT 68	
PORT 33		PORT 69	
PORT 34		PORT 70	
PORT 35		PORT 71	
PORT 36		PORT 72	

PROPOSED PORT ASSIGNMENTS (PPA4)

PORT 1		PORT 37	
PORT 2		PORT 38	
PORT 3		PORT 39	
PORT 4		PORT 40	
PORT 5		PORT 41	
PORT 6		PORT 42	
PORT 7		PORT 43	
PORT 8		PORT 44	
PORT 9		PORT 45	
PORT 10		PORT 46	
PORT 11		PORT 47	
PORT 12		PORT 48	
PORT 13		PORT 49	
PORT 14		PORT 50	
PORT 15		PORT 51	
PORT 16		PORT 52	
PORT 17		PORT 53	
PORT 18		PORT 54	
PORT 19		PORT 55	
PORT 20		PORT 56	
PORT 21		PORT 57	
PORT 22		PORT 58	
PORT 23		PORT 59	
PORT 24		PORT 60	
PORT 25	GIG DISTRIBUTION RX	PORT 61	
PORT 26	GIG DISTRIBUTION TX	PORT 62	
PORT 27	RX (SPARE)	PORT 63	
PORT 28	TX (SPARE)	PORT 64	
PORT 29		PORT 65	
PORT 30		PORT 66	
PORT 31		PORT 67	
PORT 32		PORT 68	
PORT 33		PORT 69	
PORT 34		PORT 70	
PORT 35		PORT 71	
PORT 36		PORT 72	

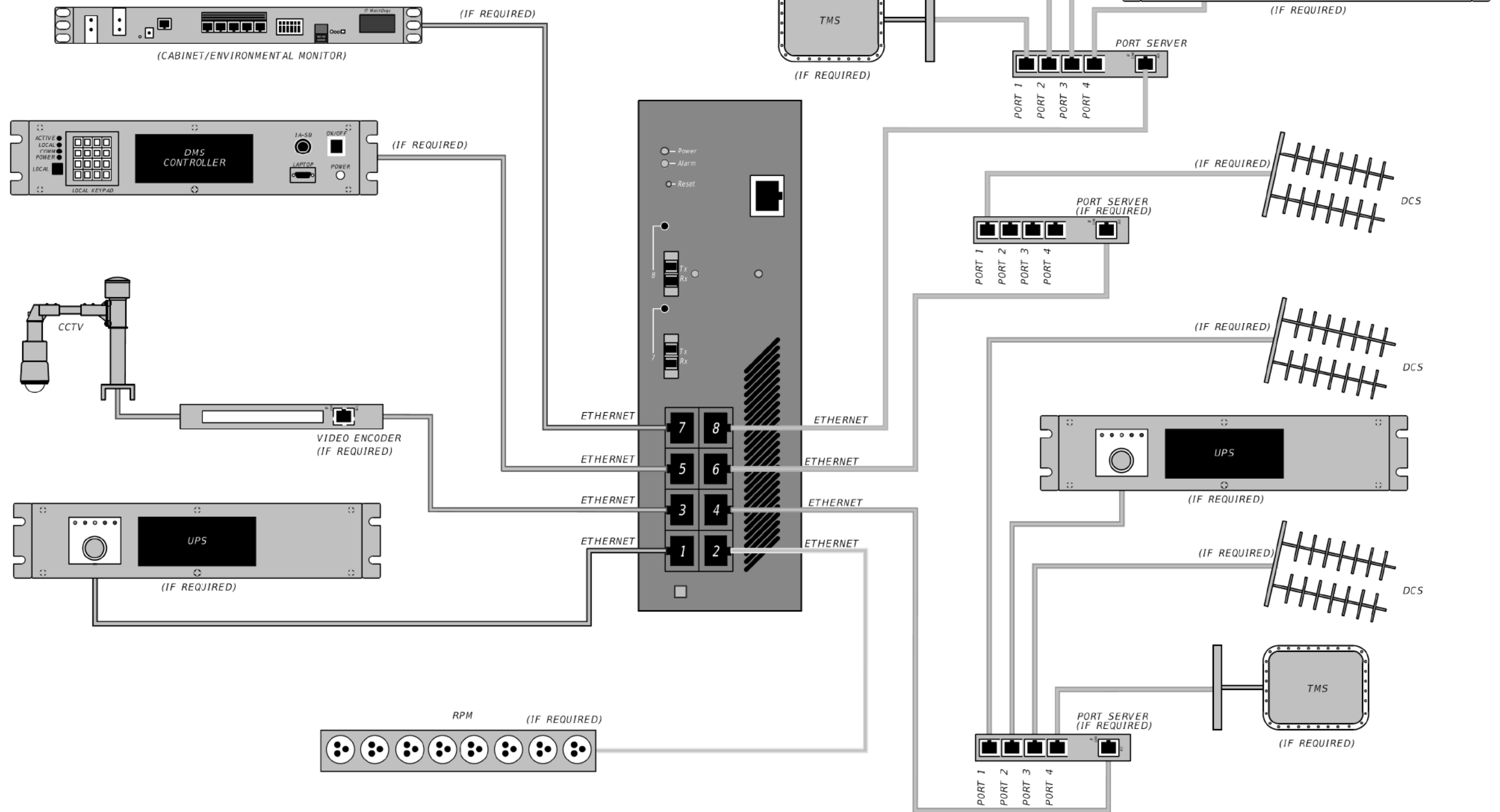
**NOTES:**

- CONTRACTOR TO VERIFY PORT ASSIGNMENTS.

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	PATCH PANEL DETAILS	SHEET NO. IT-57
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			

STANDARD PORT ASSIGNMENTS

ETHERNET CABLE COLOR CODE:  
 ENCODER - BLUE  
 PORT SERVER - GREEN  
 UPS - WHITE  
 RPM - RED  
 CABINET ENVIRONMENT - YELLOW  
 DCS - BROWN  
 DMS CONTROLLER - BLACK



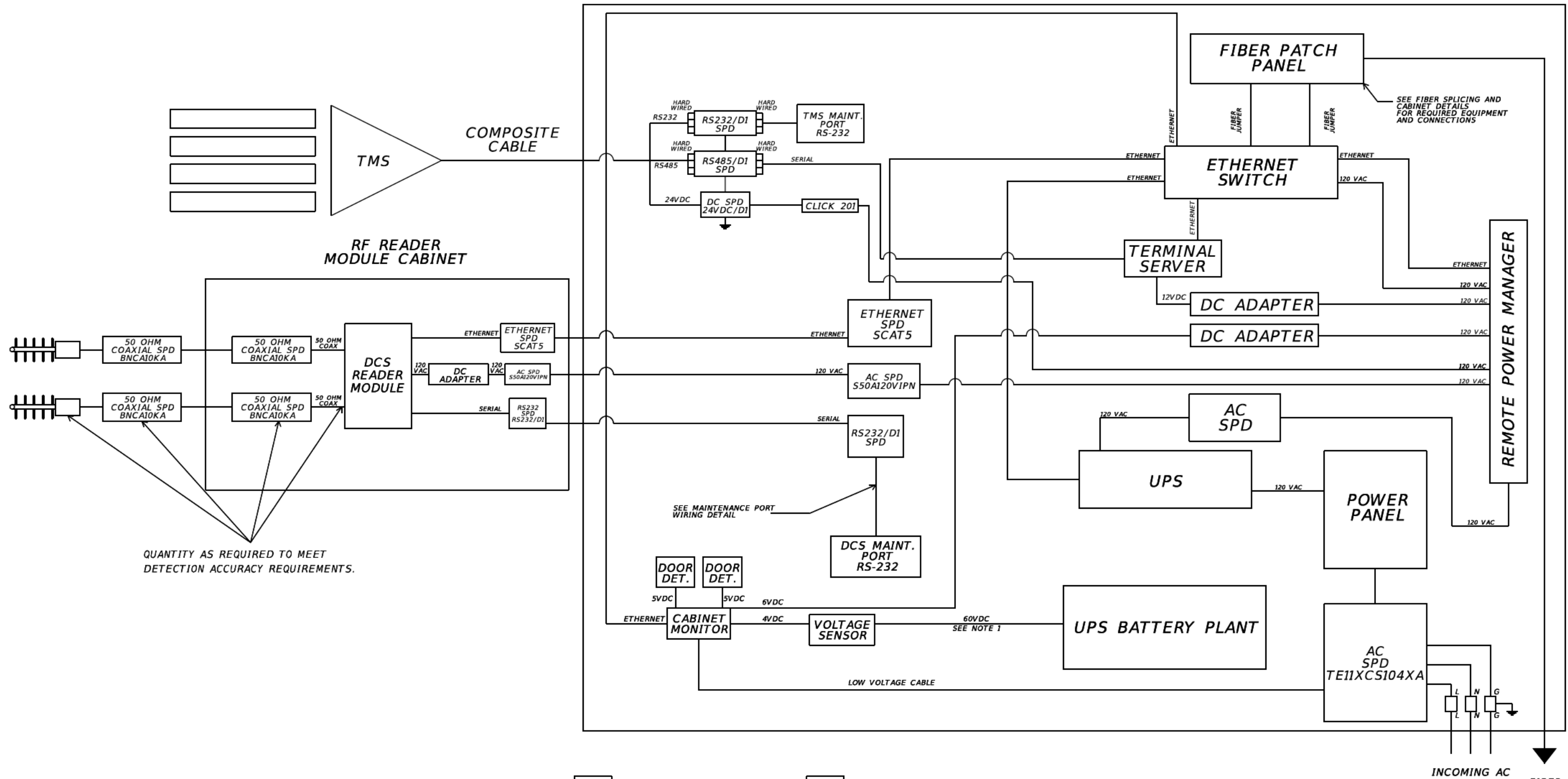
REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive DeBary, FL 32713 Phone: 386.753.0558 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	ETHERNET SWITCH DETAIL	SHEET NO. IT-58
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					



**PROPOSED DCS & PROPOSED TMS CONNECTION DIAGRAM**

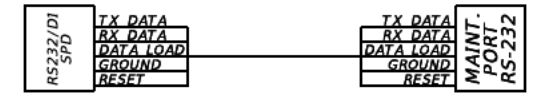
**N.T.S**

**LHUB CABINET**



QUANTITY AS REQUIRED TO MEET DETECTION ACCURACY REQUIREMENTS.

**NOTES:**  
 1. ENSURE THAT THERE IS SUFFICIENT SLACK IN THE CABLE SO THAT THE BATTERY PLANT CAN BE PULLED OUT AND ACCESSED. STORE SENSOR CABLE SLACK INSIDE UPS BATTERY TRAY. COST FOR UPS BATTERY PLANT CABLE SLACK SHALL BE INCIDENTAL TO THE CABINET/ ENVIRONMENTAL MONITOR PAY ITEM.



**MAINTENANCE PORT WIRING DETAIL**

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SHEET NO. IT-59
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202		
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902			<b>WIRING DIAGRAM</b>	

LINK LOSS BUDGET - DEVICES								
DEVICE	TO DEVICE/PLAZA	EST. TRANSMISSION DISTANCE (MI.)	FIBER ATTENUATION (dB)	NUMBER OF CONNECTORS	CONNECTOR LOSS (dB)	NUMBER OF SPLICES	TOTAL SPLICE LOSS (dB)	ESTIMATED TOTAL LOSS (dB)
EXIST DCS 429-33.7SB, CCTV 429-33.7SB, TMS 429-33.7SB, & TMS 429-33.7NB	DCS 429-34.2SB & TMS 429-34.2SB	1.25	0.81	4	1.00		0.32	2.13
DCS 429-34.1SB & TMS 429-34.1SB	TMS 429-34.2NB	5.10	3.28	4	1.00		0.32	4.60
TMS 429-34.2NB	EXIST DCS 429-33.7SB, CCTV 429-33.7SB, TMS 429-33.7SB, & TMS 429-33.7NB	0.93	0.60	4	1.00		0.32	1.92

REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558  DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>LINK LOSS BUDGET</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			IT-60
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902	SR 429	429-202			

**SR 429 72 FIBER BACKBONE CABLE (SOUTHBOUND)**

START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	72 FIBER CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
92+31	EXIST. FOMH 4628	93+00	FOMH 4632	100	90	100	290	319	0	319	1		
93+00	FOMH 4632	96+22	FOMH 4634	100	325	100	525	578	319	897	1		
96+22	FOMH 4634	101+87	FOMH 4636	100	567	100	767	844	897	1741	1		
101+87	FOMH 4636	104+71	FOMH 4638	100	284	100	484	532	1741	2273	1		
104+71	FOMH 4638	106+21	FOMH 4640	100	151	100	351	386	2273	2659	1		
106+21	FOMH 4640	109+60	FOMH 4641	100	330	100	530	583	2659	3242	1		
109+60	FOMH 4641	63+15	FOMH 4642	100	50	100	250	275	3242	3517	1		
63+15	FOMH 4642	70+37	FOMH 4645	100	721	100	921	1013	3517	4530	1		
70+37	FOMH 4645	123+68	FOMH 4647	100	684	100	884	972	4530	5502	1		
123+68	FOMH 4647	138+68	FOMH 4649	100	1500	100	1700	1870	5502	7372	1		
138+68	FOMH 4649	153+68	FOMH 4651	100	1500	100	1700	1870	7372	9242	1		
153+68	FOMH 4651	368+68	FOMH 4653	100	1500	100	1700	1870	9242	11112	1		
368+68	FOMH 4653	383+68	FOMH 4655	100	1500	100	1700	1870	11112	12982	1		
383+68	FOMH 4655	398+68	FOMH 4657	100	1500	100	1700	1870	12982	14852	1		
398+68	FOMH 4657	405+43	FOMH 4659	100	675	100	875	963	14852	15815	1		
405+43	FOMH 4659	407+63	FOMH 4661	100	221	100	421	463	15815	16278	1		
407+63	FOMH 4661	412+86	FOMH 4663	100	522	100	722	794	16278	17072	1		
412+86	FOMH 4663	312+66	FOMH 4664	100	146	100	346	381	17072	17453	1		
<b>TABLE TOTAL 72 FIBER CABLE</b>											<b>17,453</b>		

**SR 429 72 FIBER FEEDER CABLE (SOUTHBOUND)**

START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	72 FIBER CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
92+31	EXIST. FOMH 4628	93+00	FOMH 4632	100	90	100	290	319	0	319	2		
93+00	FOMH 4632	96+22	FOMH 4634	100	325	100	525	578	319	897	2		
96+22	FOMH 4634	101+87	FOMH 4636	100	567	100	767	844	897	1741	2		
101+87	FOMH 4636	104+71	FOMH 4638	100	284	100	484	532	1741	2273	2		
104+71	FOMH 4638	106+21	FOMH 4640	100	151	100	351	386	2273	2659	2		
106+21	FOMH 4640	109+60	FOMH 4641	100	330	100	530	583	2659	3242	2		
109+60	FOMH 4641	63+15	FOMH 4642	100	50	100	250	275	3242	3517	2		
63+15	FOMH 4642	70+37	FOMH 4645	100	721	100	921	1013	3517	4530	2		
70+37	FOMH 4645	123+68	FOMH 4647	100	684	100	884	972	4530	5502	2		
123+68	FOMH 4647	138+68	FOMH 4649	100	1500	100	1700	1870	5502	7372	2		
138+68	FOMH 4649	153+68	FOMH 4651	100	1500	100	1700	1870	7372	9242	2		
153+68	FOMH 4651	368+68	FOMH 4653	100	1500	100	1700	1870	9242	11112	2		
368+68	FOMH 4653	383+68	FOMH 4655	100	1500	100	1700	1870	11112	12982	2		
383+68	FOMH 4655	398+68	FOMH 4657	100	1500	100	1700	1870	12982	14852	2		
398+68	FOMH 4657	405+43	FOMH 4659	100	675	100	875	963	14852	15815	2		
405+43	FOMH 4659	407+63	FOMH 4661	100	221	100	421	463	15815	16278	2		
407+63	FOMH 4661	412+86	FOMH 4663	100	522	100	722	794	16278	17072	2		
412+86	FOMH 4663	312+66	FOMH 4664	100	146	100	346	381	17072	17453	2		
<b>TABLE TOTAL 72 FIBER CABLE</b>											<b>17,453</b>		

<b>REVISIONS</b>				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392 ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b> ROAD NO. SR 429 PROJECT NO. 429-202	CENTRAL FLORIDA EXPRESSWAY AUTHORITY	<b>FIBER ALLOCATION CHARTS</b>	SHEET NO. IT-61
DATE	DESCRIPTION	DATE	DESCRIPTION					

SR 429 72 FIBER BACKBONE CABLE (NORTHBOUND)													
START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	72 FIBER CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
92+31	EXIST. FOMH 4631	96+22	FOMH 4633	100	390	100	590	649	0	649	1		
96+22	FOMH 4633	101+87	FOMH 4635	100	567	100	767	844	649	1493	1		
101+87	FOMH 4635	104+71	FOMH 4637	100	284	100	484	532	1493	2025	1		
104+71	FOMH 4637	106+21	FOMH 4639	100	151	100	351	386	2025	2411	1		
106+21	FOMH 4639	110+81	FOMH 4643	100	460	100	660	726	2411	3137	1		
110+81	FOMH 4643	54+45	FOMH 4644	100	58	100	258	284	3137	3421	1		
54+45	FOMH 4644	116+86	FOMH 4646	100	565	100	765	842	3421	4263	1		
116+86	FOMH 4646	123+68	FOMH 4648	100	686	100	886	975	4263	5238	1		
123+68	FOMH 4648	138+68	FOMH 4650	100	1500	100	1700	1870	5238	7108	1		
138+68	FOMH 4650	153+68	FOMH 4652	100	1500	100	1700	1870	7108	8978	1		
153+68	FOMH 4652	268+68	FOMH 4654	100	1500	100	1700	1870	8978	10848	1		
268+68	FOMH 4654	283+68	FOMH 4656	100	1500	100	1700	1870	10848	12718	1		
283+68	FOMH 4656	283+35	FOMH 4656-T	100	50	100	250	275	12718	12993	1		
283+35	FOMH 4656-T	283+35	TOLL BLDG.	0	20	100	120	132	12993	13125	1		
283+35	TOLL BLDG.	283+35	FOMH 4656-T	100	20	0	120	132	13125	13257	1		
283+35	FOMH 4656-T	283+68	FOMH 4656	100	50	100	250	275	13257	13532	1		
283+68	FOMH 4656	298+68	FOMH 4658	100	1500	100	1700	1870	13532	15402	1		
298+68	FOMH 4658	305+25	FOMH 4660	100	655	100	855	941	15402	16343	1		
305+25	FOMH 4660	307+42	FOMH 4662	100	219	100	419	461	16343	16804	1		
307+42	FOMH 4662	312+63	FOMH 4664	100	522	100	722	794	16804	17598	1		
<b>TABLE TOTAL 72 FIBER CABLE</b>											<b>17,598</b>		

SR 429 72 FIBER FEEDER CABLE (NORTHBOUND)													
START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	72 FIBER CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
92+31	EXIST. FOMH 4631	96+22	FOMH 4633	100	390	100	590	649	0	649	2		
96+22	FOMH 4633	101+87	FOMH 4635	100	567	100	767	844	649	1493	2		
101+87	FOMH 4635	104+71	FOMH 4637	100	284	100	484	532	1493	2025	2		
104+71	FOMH 4637	106+21	FOMH 4639	100	151	100	351	386	2025	2411	2		
106+21	FOMH 4639	110+81	FOMH 4643	100	460	100	660	726	2411	3137	2		
110+81	FOMH 4643	54+45	FOMH 4644	100	58	100	258	284	3137	3421	2		
54+45	FOMH 4644	116+86	FOMH 4646	100	565	100	765	842	3421	4263	2		
116+86	FOMH 4646	123+68	FOMH 4648	100	686	100	886	975	4263	5238	2		
123+68	FOMH 4648	138+68	FOMH 4650	100	1500	100	1700	1870	5238	7108	2		
138+68	FOMH 4650	153+68	FOMH 4652	100	1500	100	1700	1870	7108	8978	2		
153+68	FOMH 4652	268+68	FOMH 4654	100	1500	100	1700	1870	8978	10848	2		
268+68	FOMH 4654	283+68	FOMH 4656	100	1500	100	1700	1870	10848	12718	2		
283+68	FOMH 4656	283+35	FOMH 4656-T	100	50	100	250	275	12718	12993	2		
283+35	FOMH 4656-T	283+35	TOLL BLDG.	0	20	100	120	132	12993	13125	2		
283+35	TOLL BLDG.	283+35	FOMH 4656-T	100	20	0	120	132	13125	13257	2		
283+35	FOMH 4656-T	283+68	FOMH 4656	100	50	100	250	275	13257	13532	2		
283+68	FOMH 4656	298+68	FOMH 4658	100	1500	100	1700	1870	13532	15402	2		
298+68	FOMH 4658	305+25	FOMH 4660	100	655	100	855	941	15402	16343	2		
305+25	FOMH 4660	307+42	FOMH 4662	100	219	100	419	461	16343	16804	2		
307+42	FOMH 4662	312+63	FOMH 4664	100	522	100	722	794	16804	17598	2		
<b>TABLE TOTAL 72 FIBER CABLE</b>											<b>17,598</b>		
<b>GRAND TOTAL 72 FIBER CABLE</b>											<b>70,102</b>		

REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive DeBary, FL 32713 Phone: 386.753.0558 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER ALLOCATION CHARTS	SHEET NO. IT-62
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

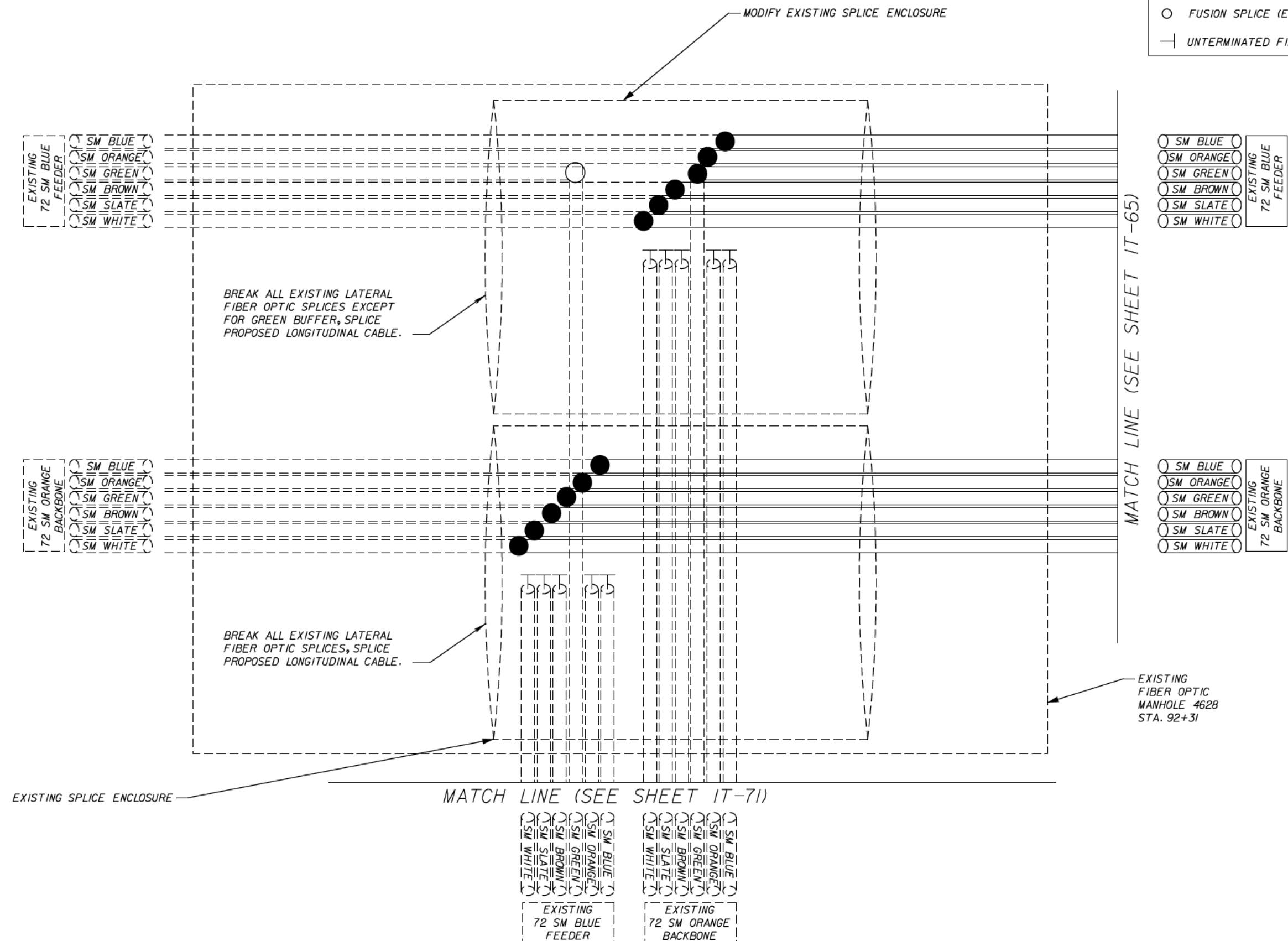
SR 429 12 FIBER DROP CABLE (SOUTHBOUND)													
START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	12 FIBER DROP CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
70+37	FOMH 4645	70+37	FOPB 429-34.2	100	18	50	168	185	0	185	2		
70+37	FOPB 429-34.2	68+85	FOPB 429-34.2	50	150	50	250	275	185	460	2		
<b>TABLE TOTAL 12 FIBER CABLE</b>											<b>460</b>		

SR 429 12 FIBER DROP CABLE (NORTHBOUND)													
START MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	END MANHOLE OR NEW PULLBOX STATION	MANHOLE OR PULLBOX NO.	12 FIBER DROP CABLE (LENGTH IN FEET)								CABLE REEL NO.	CABLE REEL LENGTH
				START MANHOLE OR PULLBOX SLACK	CABLE IN DUCT BETWEEN MANHOLES OR PULLBOX	END MANHOLE OR PULLBOX SLACK	TOTAL MANHOLE TO MANHOLE	TOTAL MANHOLE TO MANHOLE + 10% CONTINGENCY	START MANHOLE CABLE SEQUENCE	END MANHOLE CABLE SEQUENCE			
54+45	FOMH 4644	54+77	FOPB 429-34.1	100	33	50	183	201	0	201	1		
<b>TABLE TOTAL 12 FIBER CABLE</b>											<b>201</b>		
<b>GRAND TOTAL 12 FIBER CABLE</b>											<b>661</b>		

REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558  DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b> ROAD NO. PROJECT NO. SR 429 429-202		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>FIBER ALLOCATION CHARTS</b>	SHEET NO. IT-63
DATE	DESCRIPTION	DATE	DESCRIPTION						
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**Traffic Engineering Data Solutions, Inc.**  
 80 Spring Vista Drive Phone: 386.753.0558  
 DeBary, FL 32713 Fax: 386.753.0778  
 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**  
 ROAD NO. SR 429  
 PROJECT NO. 429-202

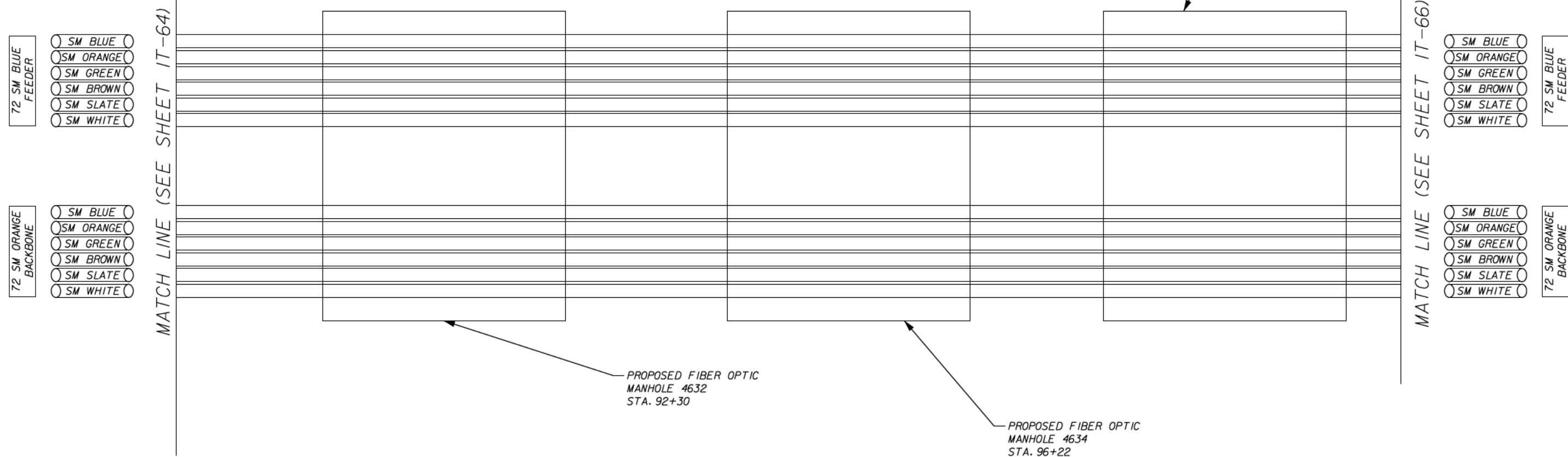
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**FIBER SPLICING DIAGRAMS SOUTHBOUND 429**

SHEET NO. IT-64

LEGEND

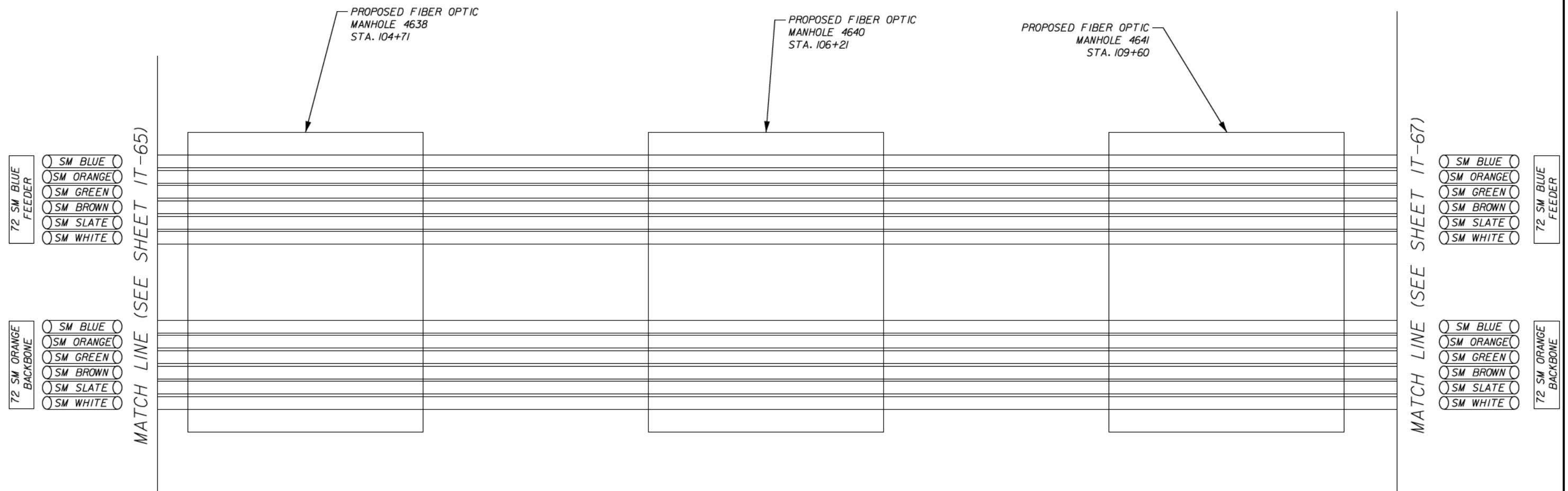
- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- ├ UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558                      DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>FIBER SPLICING DIAGRAMS SOUTHBOUND 429</b>		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION			ROAD NO.	PROJECT NO.		IT-65		
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902	SR 429	429-202					

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER

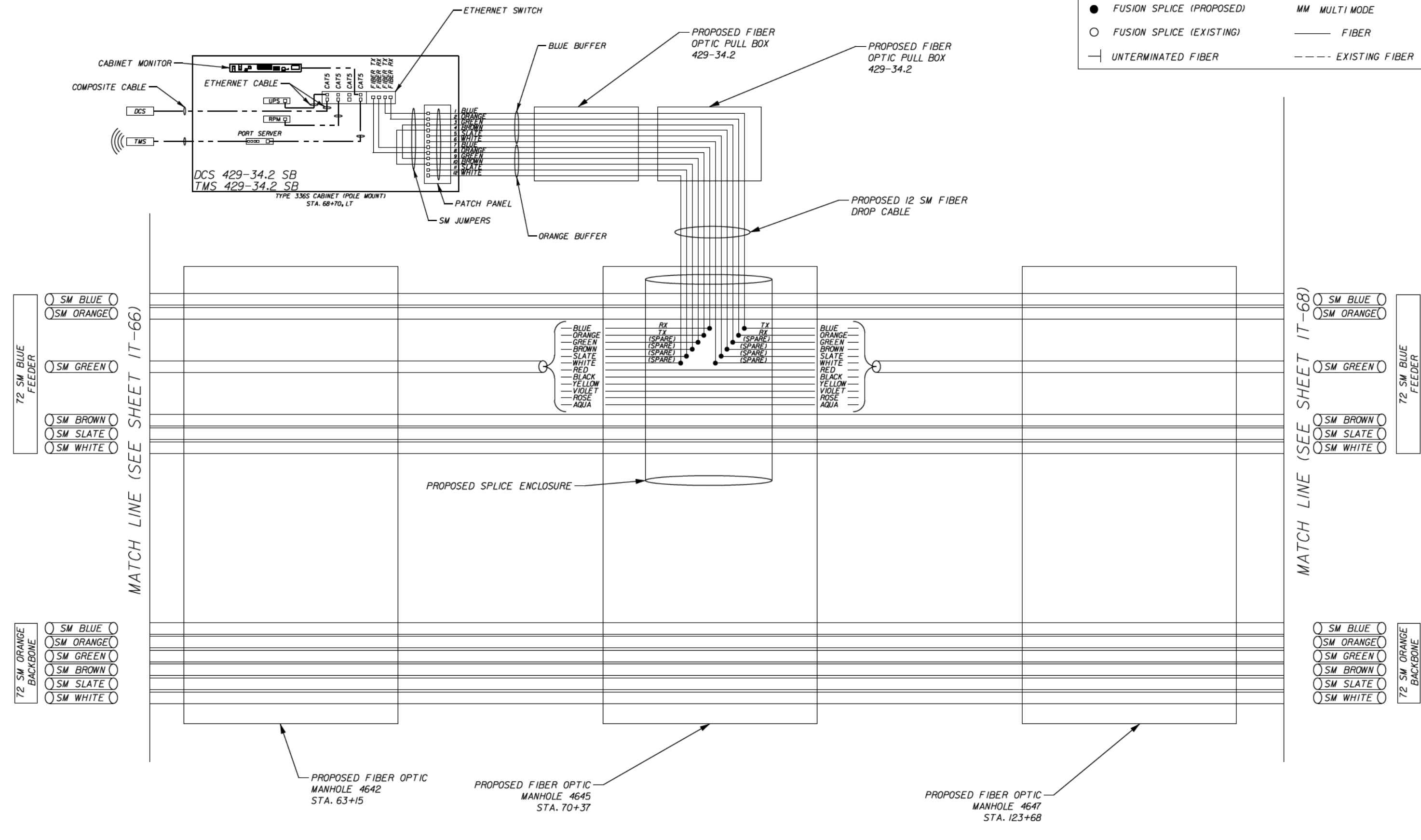


REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558                      DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>FIBER SPLICING DIAGRAMS SOUTHBOUND 429</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			IT-66
				<small>ENGINEER OF RECORD: FRED D. FERRELL, P.E                      FL REGISTRATION NO. 41902</small>	SR 429	429-202			



LEGEND

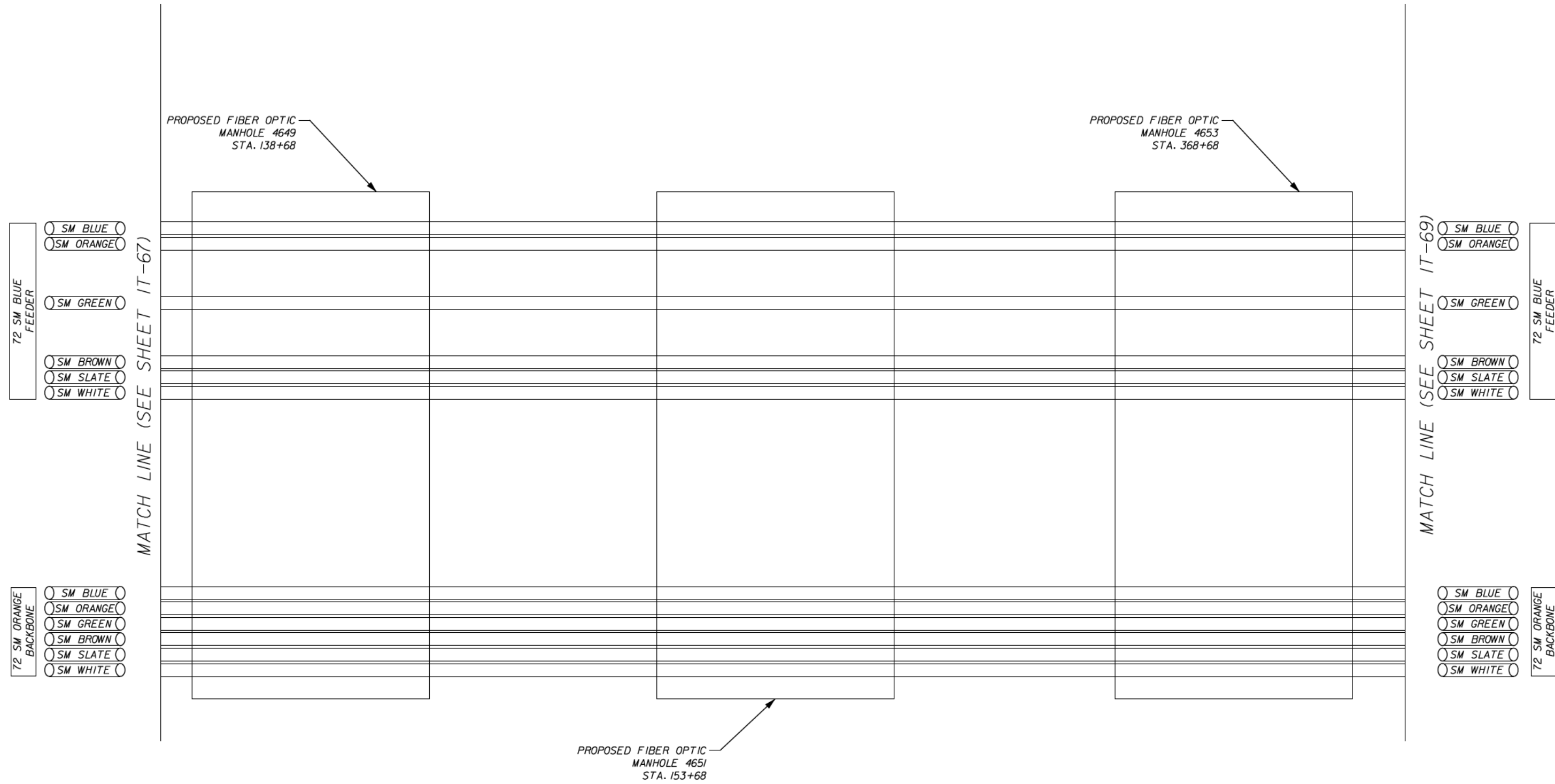
- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- - - - EXISTING FIBER



REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive Phone: 386.753.0558 DeBary, FL 32713 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER SPLICING DIAGRAMS SOUTHBOUND 429	SHEET NO. IT-67
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E FL REGISTRATION NO. 41902					

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- ┤ UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- - - - EXISTING FIBER



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

*Traffic Engineering Data Solutions, Inc.*  
 80 Spring Vista Drive Phone: 386.753.0558  
 DeBary, FL 32713 Fax: 386.753.0778  
 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

ROAD NO.	PROJECT NO.
SR 429	429-202

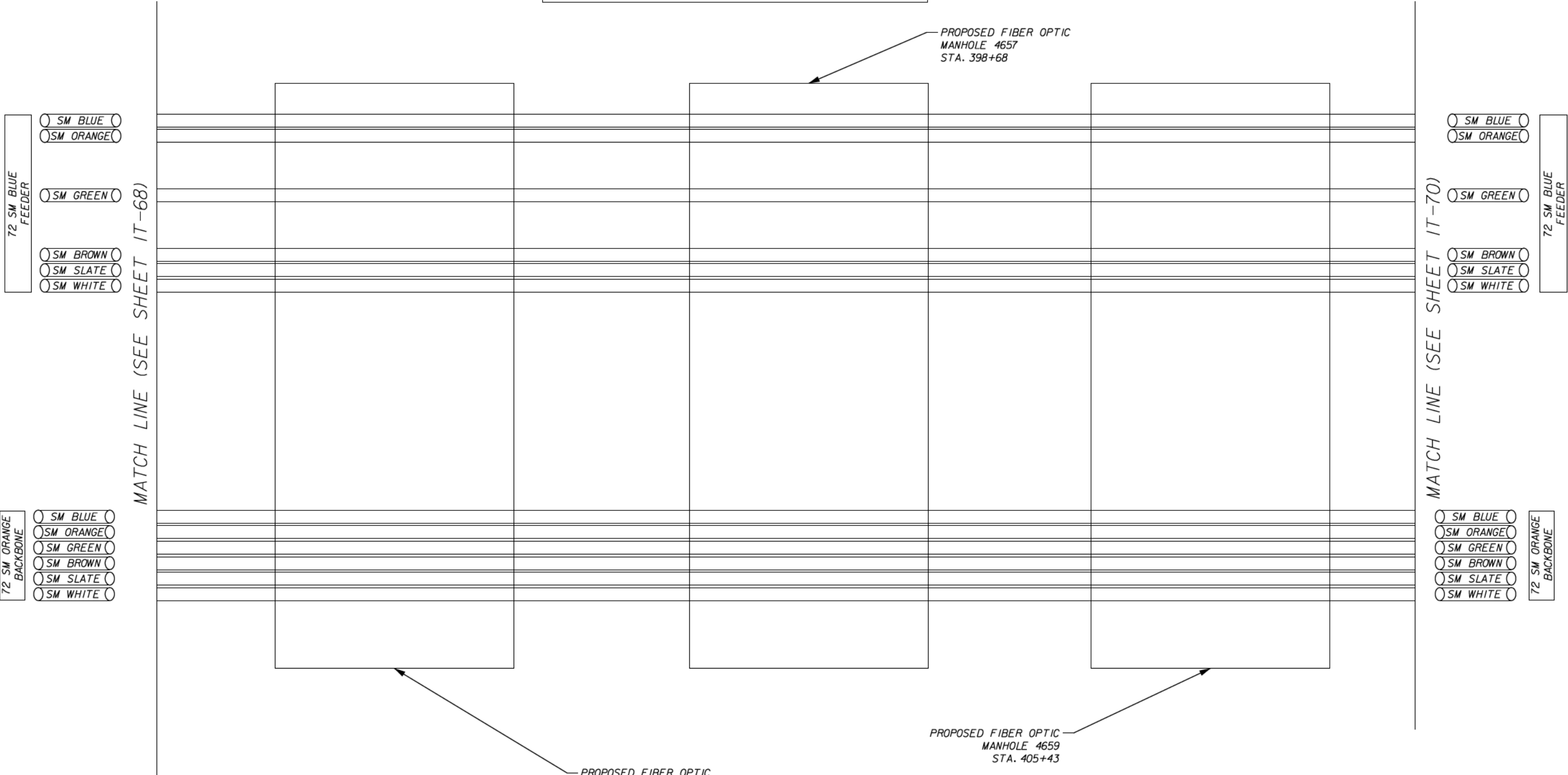
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

**FIBER SPLICING DIAGRAMS SOUTHBOUND 429**

SHEET NO.  
IT-68

**LEGEND**

● FUSION SPLICE (PROPOSED)	SM SINGLE MODE
○ FUSION SPLICE (EXISTING)	MM MULTI MODE
— UNTERMINATED FIBER	—— FIBER
	---- EXISTING FIBER



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**Traffic Engineering Data Solutions, Inc.**  
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 DeBary, FL 32713 Fax: 386.753.0778  
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 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

ROAD NO.	PROJECT NO.
SR 429	429-202

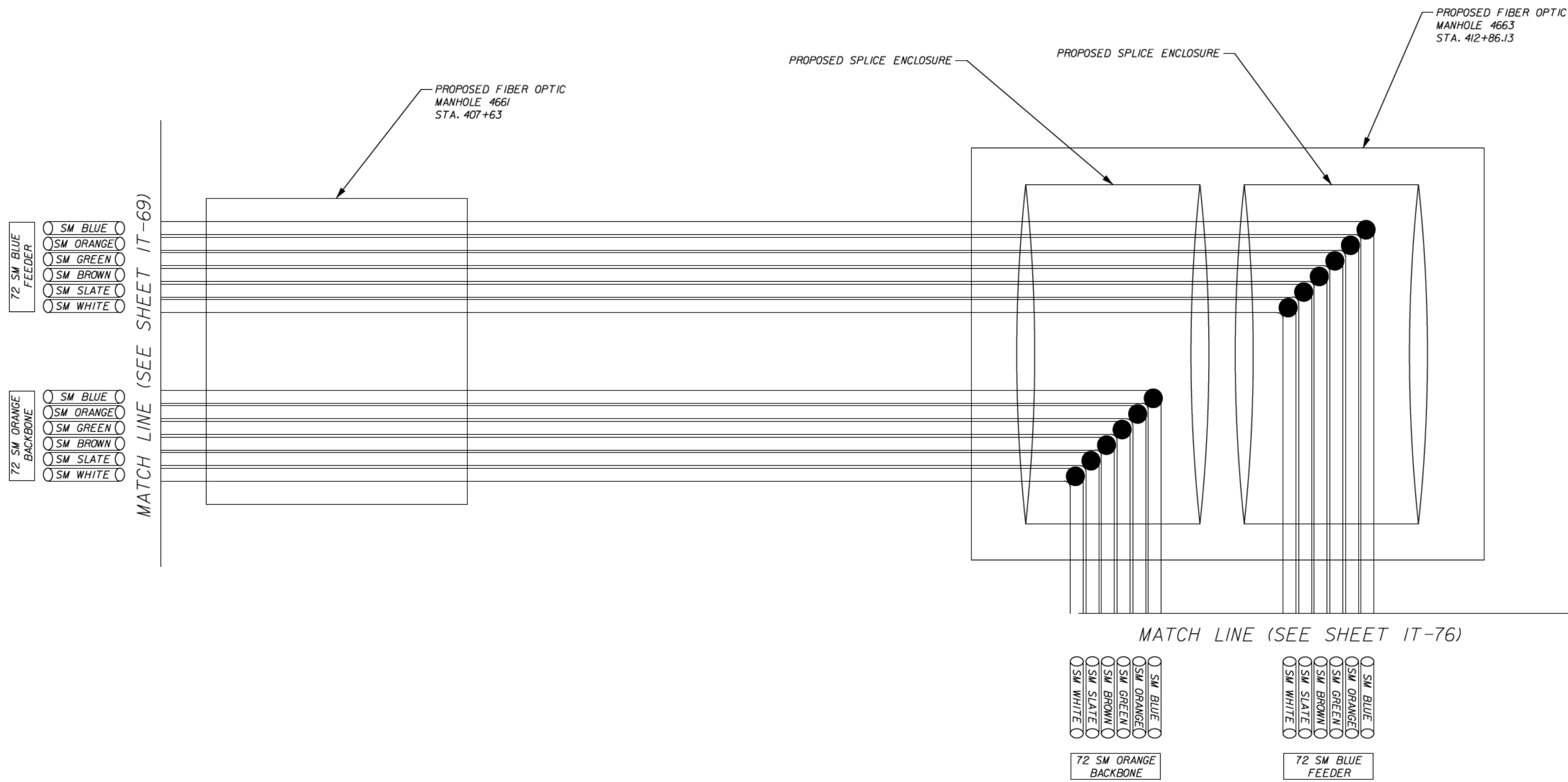
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**FIBER SPLICING DIAGRAMS  
SOUTHBOUND 429**

SHEET NO.  
**IT-69**

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



- 72 SM BLUE FEEDER
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

- 72 SM ORANGE BACKBONE
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

- 72 SM ORANGE BACKBONE
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

- 72 SM BLUE FEEDER
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**Traffic Engineering Data Solutions, Inc.**  
 80 Spring Vista Drive Phone: 386.753.0558  
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 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
 FL REGISTRATION NO. 41902

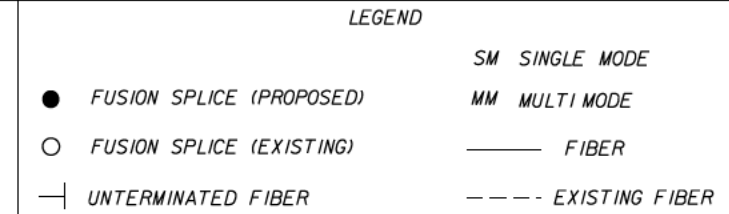
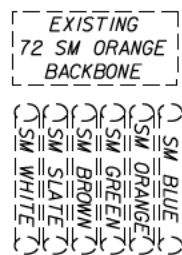
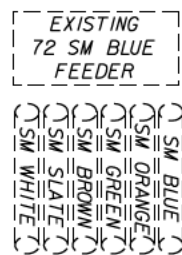
**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

ROAD NO.	PROJECT NO.
SR 429	429-202

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**FIBER SPLICING DIAGRAMS SOUTHBOUND 429**

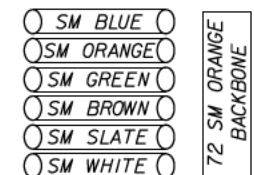
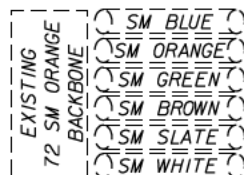
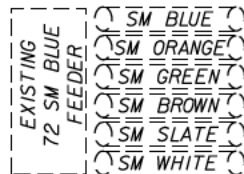
SHEET NO.  
IT-70



MATCH LINE (SEE SHEET IT-64)

BREAK ALL EXISTING LATERAL  
FIBER OPTIC SPLICES EXCEPT  
FOR GREEN BUFFER, SPLICE  
PROPOSED LONGITUDINAL CABLE.

PROPOSED FIBER OPTIC  
MANHOLE 4635  
STA. 101+87



MATCH LINE (SEE SHEET IT-72)

PROPOSED SPLICE ENCLOSURE

PROPOSED SPLICE ENCLOSURE

EXISTING  
FIBER OPTIC  
MANHOLE 4631  
STA. 92+31

PROPOSED FIBER OPTIC  
MANHOLE 4633  
STA. 96+22

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Traffic Engineering Data Solutions, Inc.  
80 Spring Vista Drive Phone: 386.753.0558  
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ENGINEER OF RECORD: FRED D. FERRELL, P.E.  
FL REGISTRATION NO. 41902

**CENTRAL FLORIDA  
EXPRESSWAY AUTHORITY**

ROAD NO. SR 429	PROJECT NO. 429-202
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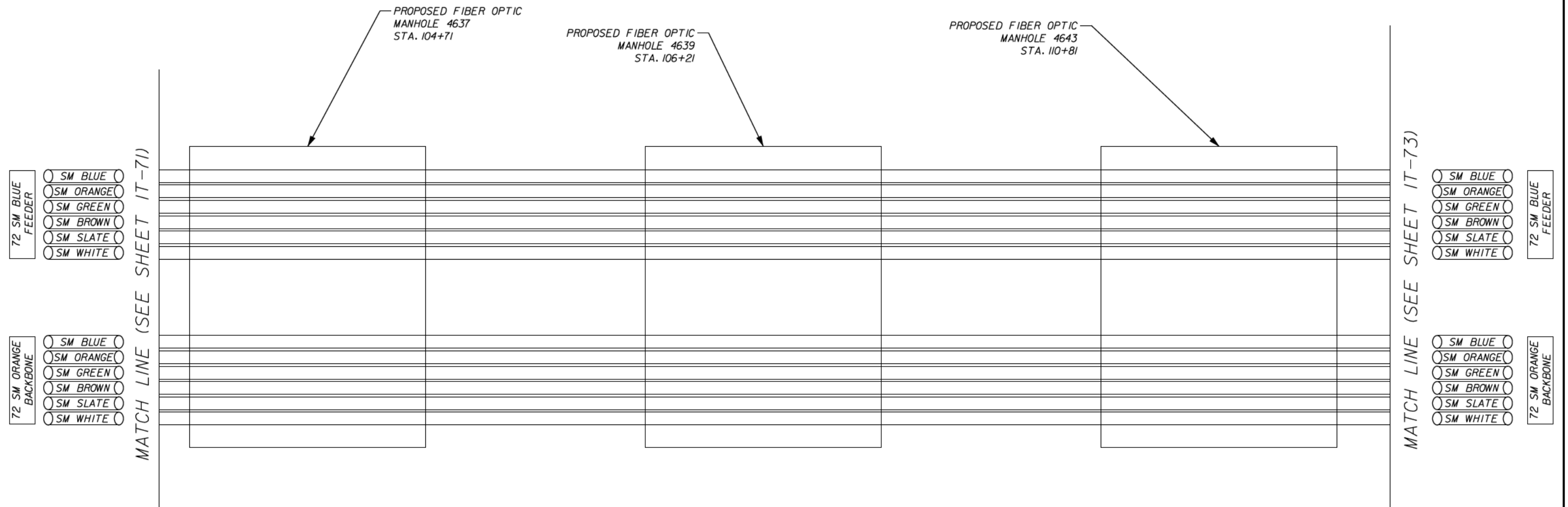
CENTRAL  
FLORIDA  
EXPRESSWAY  
AUTHORITY

**FIBER SPLICING DIAGRAMS  
NORTHBOUND 429**

SHEET  
NO.  
IT-71

LEGEND

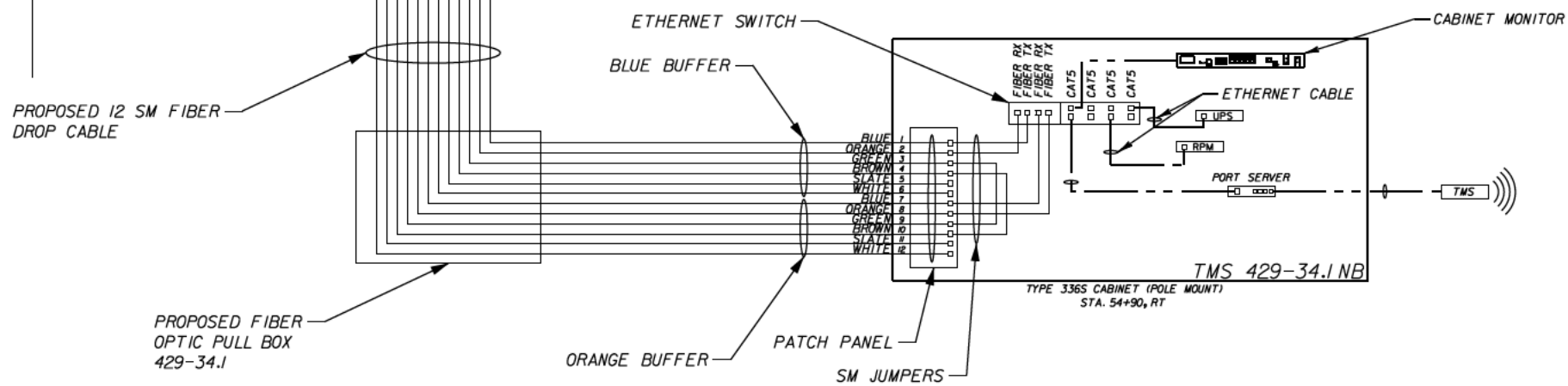
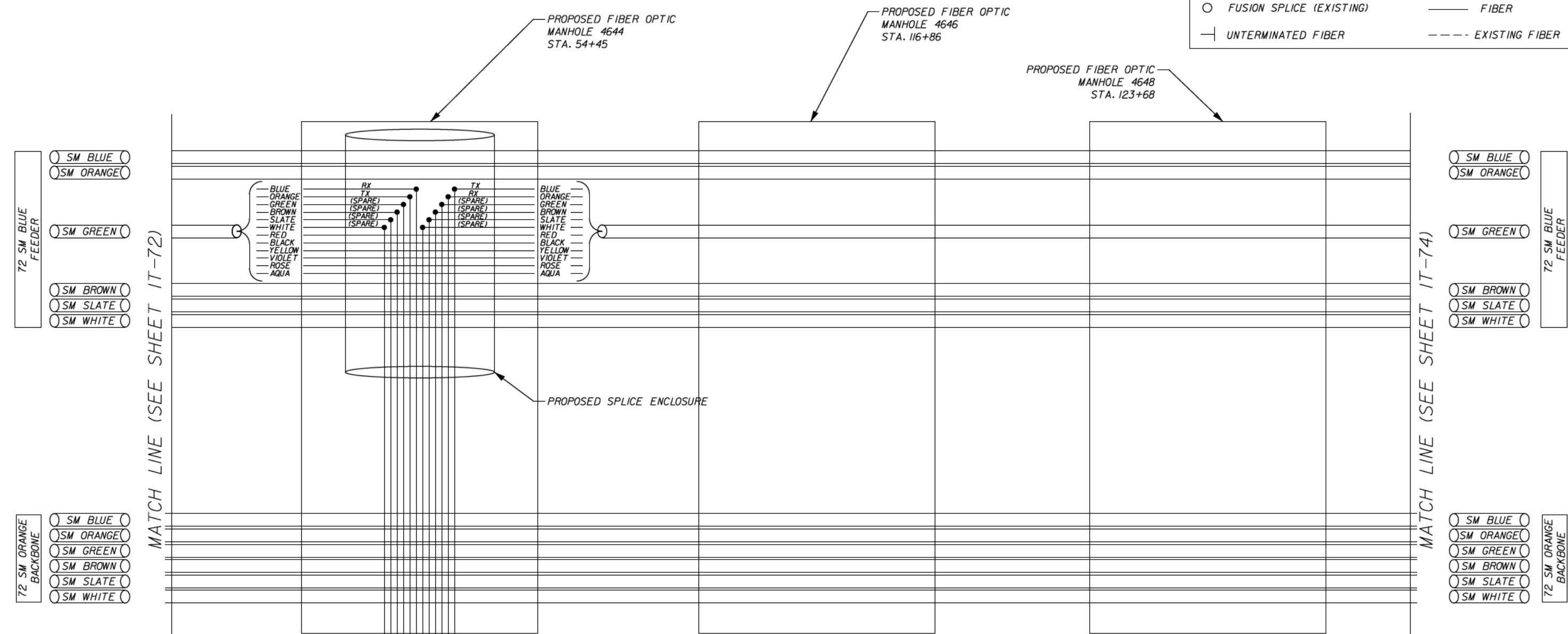
- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558                      DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>FIBER SPLICING DIAGRAMS NORTHBOUND 429</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			IT-72
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			

LEGEND

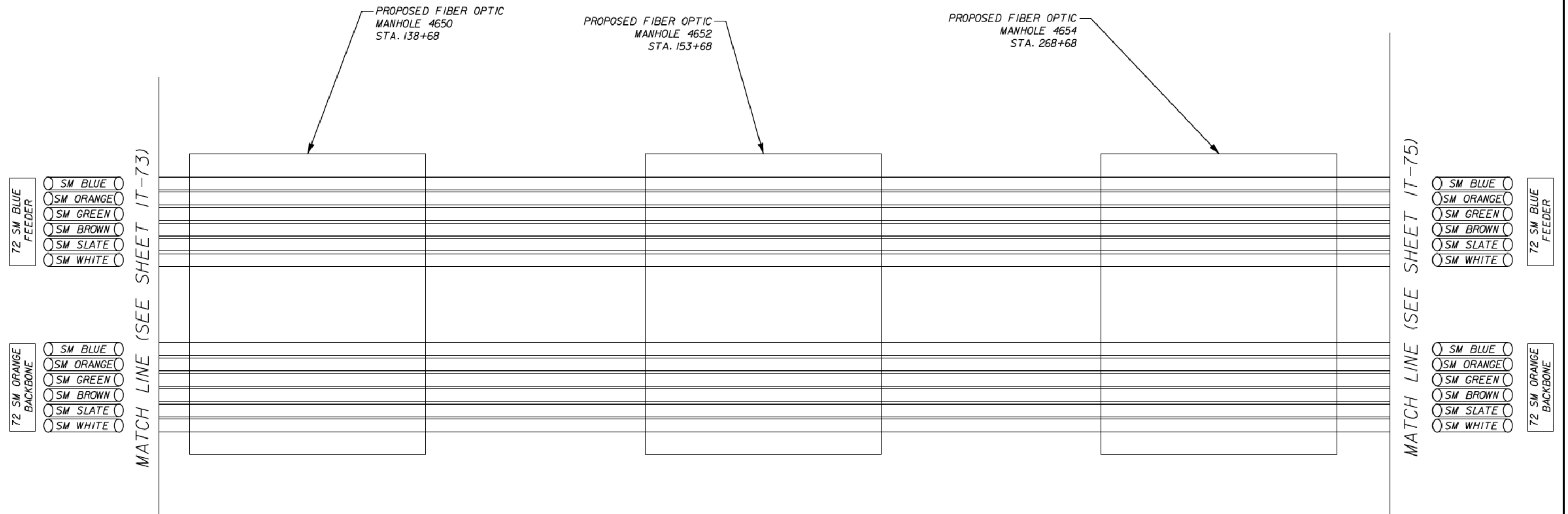
- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- FIBER
- EXISTING FIBER
- SM SINGLE MODE
- MM MULTI MODE



REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive DeBary, FL 32713 Phone: 386.753.0558 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	FIBER SPLICING DIAGRAMS NORTHBOUND 429	SHEET NO. IT-73
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive Phone: 386.753.0558                      DeBary, FL 32713 Fax: 386.753.0778</small> CERTIFICATION OF AUTHORIZATION # 27392	<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>	<b>FIBER SPLICING DIAGRAMS NORTHBOUND 429</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	PROJECT NO.			IT-74
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902	SR 429	429-202			



LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER

PROPOSED FIBER OPTIC  
MANHOLE 4656  
STA. 283+68

PROPOSED FIBER OPTIC  
MANHOLE 4658  
STA. 298+68

PROPOSED FIBER OPTIC  
MANHOLE 4656-T  
STA. 283+35

PROPOSED FIBER OPTIC  
MANHOLE 4660  
STA. 305+25

PROPOSED TOLL BUILDING  
STA. 283+35

PROPOSED 72 PORT RACK MOUNTED FIBER  
OPTIC PATCH PANELS. SEE PATCH PANEL  
DETAILS (SHEET IT-57).

MATCH LINE (SEE SHEET IT-74)

MATCH LINE (SEE SHEET IT-76)

- 72 SM BLUE FEEDER
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○
- 72 SM BLUE FEEDER

- 72 SM ORANGE BACKBONE
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○

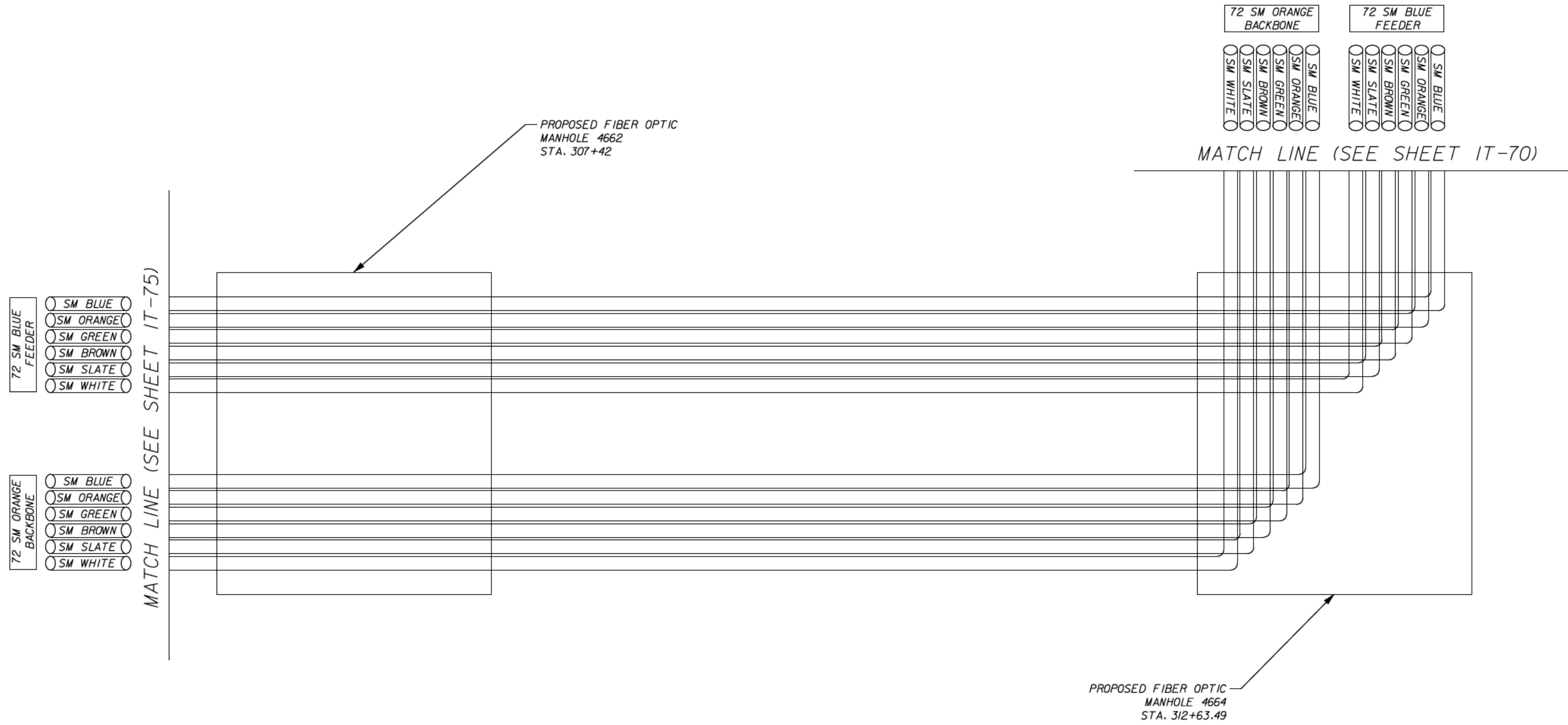
- SM BLUE ○
  - SM ORANGE ○
  - SM GREEN ○
  - SM BROWN ○
  - SM SLATE ○
  - SM WHITE ○
- 72 SM ORANGE BACKBONE

PPA1      PPA2      PPA3      PPA4

REVISIONS				<i>Traffic Engineering Data Solutions, Inc.</i> <small>80 Spring Vista Drive    Phone: 386.753.0558                      DelBary, FL 32713    Fax: 386.753.0778</small>		<b>CENTRAL FLORIDA EXPRESSWAY AUTHORITY</b>		<b>FIBER SPLICING DIAGRAMS NORTHBOUND 429</b>		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION			ROAD NO.	PROJECT NO.			IT-75
				<small>CERTIFICATION OF AUTHORIZATION # 27392</small> ENGINEER OF RECORD: FRED D. FERRELL, P.E. <small>FL REGISTRATION NO. 41902</small>		SR 429	429-202	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		

LEGEND

- FUSION SPLICE (PROPOSED)
- FUSION SPLICE (EXISTING)
- ┤ UNTERMINATED FIBER
- SM SINGLE MODE
- MM MULTI MODE
- FIBER
- EXISTING FIBER



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

**Traffic Engineering Data Solutions, Inc.**  
 80 Spring Vista Drive Phone: 386.753.0558  
 DeBary, FL 32713 Fax: 386.753.0778  
 CERTIFICATION OF AUTHORIZATION # 27392  
 ENGINEER OF RECORD: FRED D. FERRELL, P.E  
 FL REGISTRATION NO. 41902

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

ROAD NO.	PROJECT NO.
SR 429	429-202

**CENTRAL FLORIDA EXPRESSWAY AUTHORITY**

**FIBER SPLICING DIAGRAMS  
 NORTHBOUND 429**

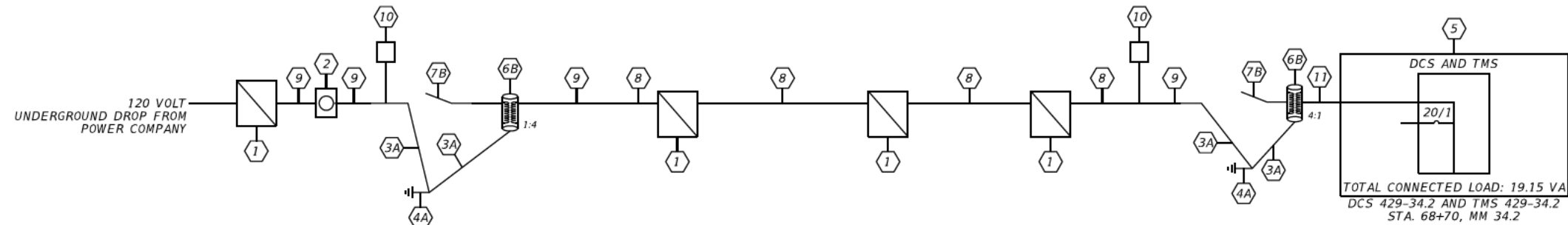
SHEET NO.  
 IT-76

KEYED NOTES:

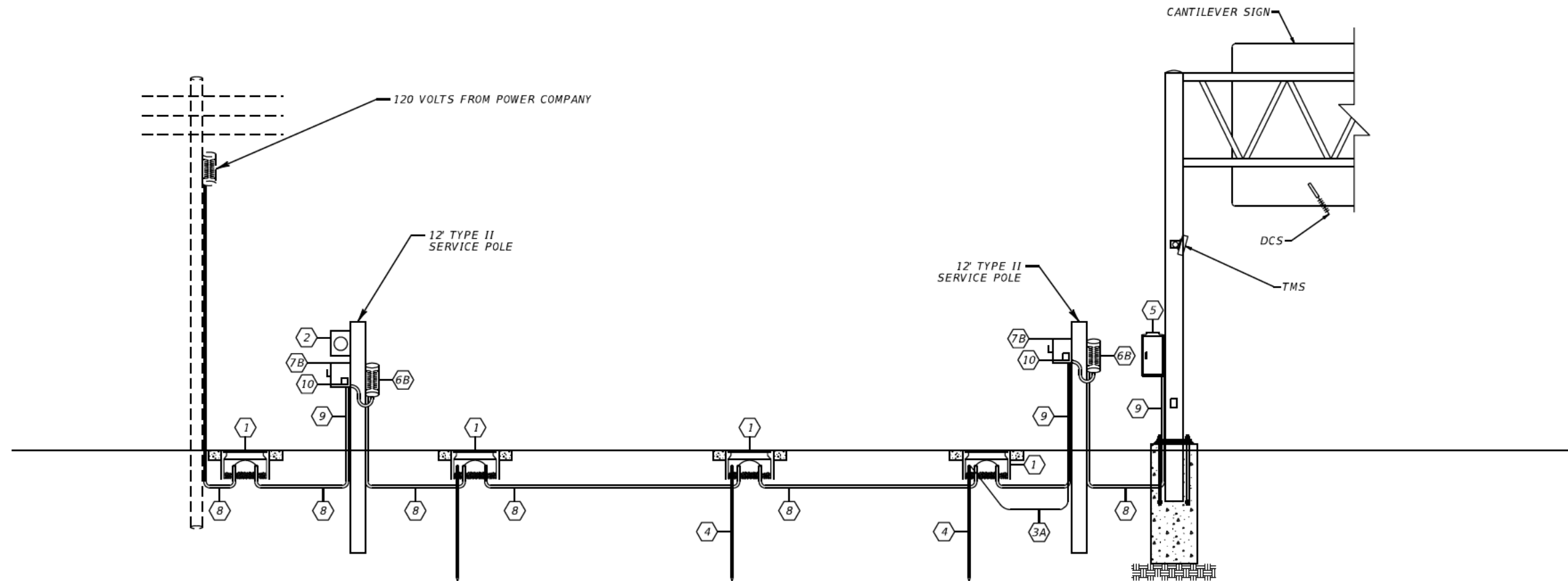
- 1 PULL BOX
- 2 METER SOCKET BY CONTRACTOR
- 3 INSULATED COPPER GROUND WIRE IN 1/2" RIGID GALVANIZED STEEL OR BARE WIRE IF UNDERGROUND
- 3A #2 TIN-PLATED BARE SOLID COPPER GROUNDING WIRE
- 4 COPPER CLAD GROUND ROD 5/8" DIA. 20' LONG REQUIREMENTS PER ITS DETAILS, THIS SHEET AND THE SPECS.
- 5 TYPE 336S OR 334 CABINET W/CIRCUIT BREAKER
- 5A NEMA 3R ENCLOSURE (NON-POWER RELATED)
- 5B HART OR RWIS CABINET
- 6 XFMR (1.5 KVA)
- 6B XFMR (3 KVA)
- 6C XFMR (5 KVA)
- 7 PANELBOARD WITH MAIN BREAKER (SIZE PER NEC REQUIREMENT)
- 7A 15A, 120V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7B 30A, HEAVY DUTY SAFETY SWITCH
- 7C 15A, 480V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7D 30A, 120V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7E 30A, 120/240V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7F 30A, 480V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7G 40A, 120/240V CIRCUIT BREAKER METALLIC ENCLOSURE
- 8 2" SCHEDULE 40 HDPE CONDUIT
- 9 2" RIGID GALVANIZED STEEL CONDUIT
- 10 TYPE 1 SURGE PROTECTION DEVICE
- 11 1" FLEX CONDUIT

- NOTES:
1. CONDUCTOR SIZE AND QUANTITY VARIES. SEE PLAN SHEETS.
  2. DISCONNECT MAY NOT BE VISIBLE ON SERVICE DETAIL IF MOUNTED ON THE BACK OF THE POLE.
  3. PULL BOX LOCATION AND QUANTITY VARIES. SEE PLAN SHEETS.
  4. PULL BOX SYMBOLS SHOWN IN THE SERVICE DETAIL ARE DIAGRAMATIC ONLY AND DO NOT REFLECT INSTALLATION REQUIREMENTS.

POWER SERVICE DETAIL LOAD CENTER "C"  
DCS 429-34.2 AND TMS 429-34.2



ONE-LINE DIAGRAM



SERVICE DETAIL

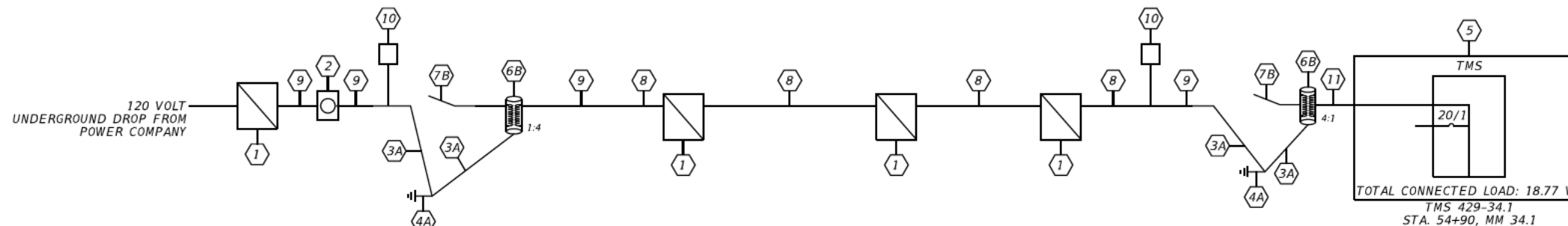
REVISIONS				Traffic Engineering Data Solutions, Inc. 80 Spring Vista Drive DeBary, FL 32713 Phone: 386.753.0558 Fax: 386.753.0778 CERTIFICATION OF AUTHORIZATION # 27392	CENTRAL FLORIDA EXPRESSWAY AUTHORITY		CENTRAL FLORIDA EXPRESSWAY AUTHORITY	SHEET NO.  IT-77
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202		
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902			<b>SERVICE POINT DETAILS</b>	

KEYED NOTES:

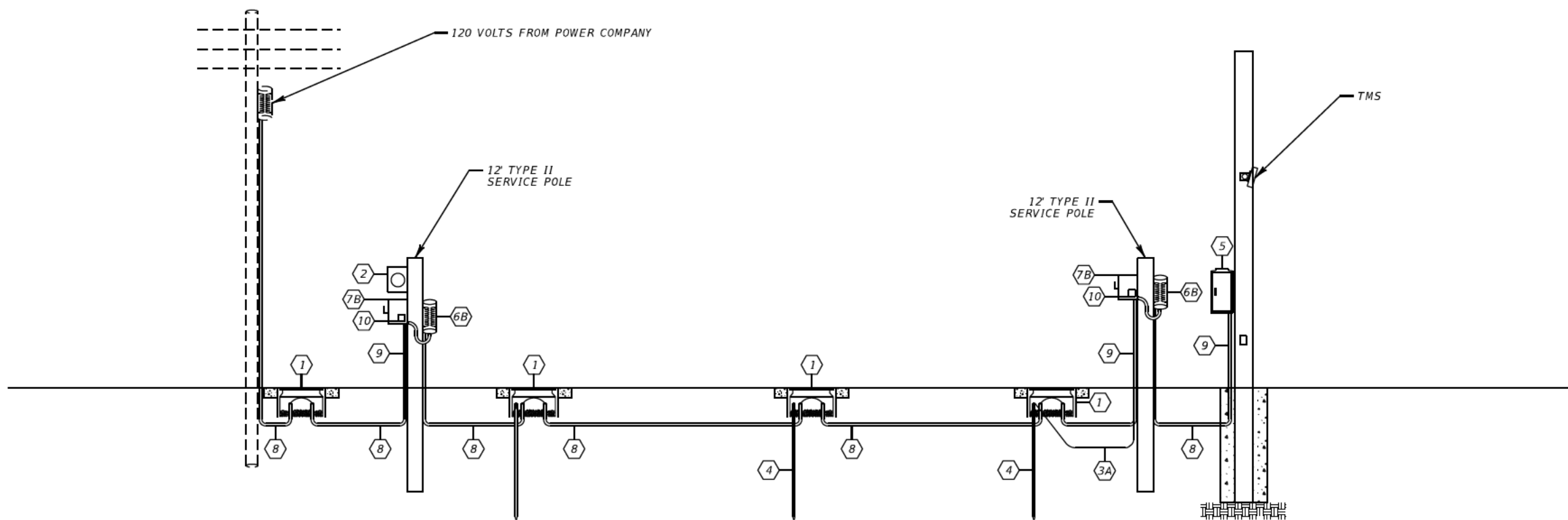
- 1 PULL BOX
- 2 METER SOCKET BY CONTRACTOR
- 3 INSULATED COPPER GROUND WIRE IN 1/2" RIGID GALVANIZED STEEL OR BARE WIRE IF UNDERGROUND
- 3A #2 TIN-PLATED BARE SOLID COPPER GROUNDING WIRE
- 4 COPPER CLAD GROUND ROD 5/8" DIA. 20' LONG REQUIREMENTS PER ITS DETAILS, THIS SHEET AND THE SPECS.
- 5 TYPE 336S OR 334 CABINET W/CIRCUIT BREAKER
- 5A NEMA 3R ENCLOSURE (NON-POWER RELATED)
- 5B HART OR RWIS CABINET
- 6 XFMR (1.5 KVA)
- 6B XFMR (3 KVA)
- 6C XFMR (5 KVA)
- 7 PANELBOARD WITH MAIN BREAKER (SIZE PER NEC REQUIREMENT)
- 7A 15A, 120V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7B 30A, HEAVY DUTY SAFETY SWITCH
- 7C 15A, 480V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7D 30A, 120V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7E 30A, 120/240V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7F 30A, 480V CIRCUIT BREAKER METALLIC ENCLOSURE
- 7G 40A, 120/240V CIRCUIT BREAKER METALLIC ENCLOSURE
- 8 2" SCHEDULE 40 HDPE CONDUIT
- 9 2" RIGID GALVANIZED STEEL CONDUIT
- 10 TYPE 1 SURGE PROTECTION DEVICE
- 11 1" FLEX CONDUIT

- NOTES:
1. CONDUCTOR SIZE AND QUANTITY VARIES. SEE PLAN SHEETS.
  2. DISCONNECT MAY NOT BE VISIBLE ON SERVICE DETAIL IF MOUNTED ON THE BACK OF THE POLE.
  3. PULL BOX LOCATION AND QUANTITY VARIES. SEE PLAN SHEETS.
  4. PULL BOX SYMBOLS SHOWN IN THE SERVICE DETAIL ARE DIAGRAMATIC ONLY AND DO NOT REFLECT INSTALLATION REQUIREMENTS.

POWER SERVICE DETAIL LOAD CENTER "D"  
TMS 429-34.1



ONE-LINE DIAGRAM



SERVICE DETAIL

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DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO. SR 429	PROJECT NO. 429-202			
				ENGINEER OF RECORD: FRED D. FERRELL, P.E. FL REGISTRATION NO. 41902					